Response Action Plan and Construction Contingency Plan

Broadway at Center South Broadway Avenue and Easter Center Street Rochester, Minnesota

Prepared For

Titan Development and Investments

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February 28, 2014

Project RO-13-08144A

Ms. Stacey Hendry-Van Patten Minnesota Pollution Control Agency 520 Lafayette Road North Saint Paul, MN 55115-4194

Re: Response Action Plan and Construction Contingency Plan

Broadway at Center

South Broadway Avenue and East Center Street

Rochester, Minnesota

Dear Ms. Hendry-Van Patten:

The attached Response Action Plan and Construction Contingency Plan (RAP/CCP) for the above-referenced site is being submitted for Minnesota Pollution Control Agency (MPCA) review and approval. The Site, which is proposed for redevelopment for mixed residential and commercial use, encompasses nine parcels on approximately 1.5 acres of land in Rochester, Minnesota. The attached RAP/CCP provides a description of the methods that will be used to manage contaminated materials at the Site and to identify, evaluate and manage potentially contaminated materials that may be encountered during construction.

If you have any questions, please call Todd Lantto at 952.995.2422 or Tim Lenway at 952.995.2488

Sincerely,

BRAUN INTERTEC CORPORATION

Todd M. Lantto Senior Scientist

Timothy S. Lenway, MPH Principal – Senior Scientist

Attachment:

Response Action Plan and Construction Contingency Plan

c: Mr. Terry Spaeth, City of Rochester

Mr. Darren Schlapkohl, Titan Development and Investments

Mr. Mark Steege, Titan Development and Investments

Response Action Plan and Construction Contingency Plan Broadway at Center Rochester, Minnesota

A. Introduction

On behalf of Titan Development and Investments, Braun Intertec Corporation prepared this Response Action Plan and Construction Contingency Plan (RAP/CCP) for the proposed Broadway at Center Redevelopment located in Rochester, Minnesota (Site). The Site encompasses nine parcels on approximately 1.5 acres of land located at South Broadway Avenue and East Center Street in Rochester, Minnesota. A Site location map is included as Figure 1, and a Site sketch as Figure 2.

As part of the project, the Site buildings will be razed and will be redeveloped with a 24-story building including a mixture of hotel, apartment, office and retail spaces. The project will also include construction of a multi-level parking ramp covering the east half of the block. One level of underground parking will be constructed beneath both the mixed used building and the parking ramp. Redevelopment plans are included in Appendix A.

This RAP/CCP provides a description of the methods that will be used to manage contaminated materials at the Site and to identify, evaluate and manage potentially contaminated materials that may be encountered during construction. The response actions that are being proposed are construction related response actions.

Titan Development and Investments is requesting Minnesota Pollution Control Agency (MPCA) approval of the RAP/CCP. Following project completion and submittal of a RAP/CCP Implementation Report, approval of response actions completed, Site closure and a No Further Action as appropriate will be requested. In addition, Titan Development and Investments is requesting that a No Association Determination (NAD) be provided for the non-petroleum soil and groundwater impacts that have been detected at the Site. A Proposed Actions Letter is being submitted under separate cover.



B. Project Background

B.1. Site Location

The Site is located at South Broadway Avenue and East Center Street in Rochester, Minnesota. The approximate center of the Site is located at Latitude 44.023 North and Longitude 92.462 West. The Site is located within the southwest quarter of the southeast quarter of Section 35, Township 107 North, Range 14 West, in the City of Rochester, Olmsted County, Minnesota and consists of nine parcels totaling approximately 1.5 acres. Property Identification Numbers (PIN) associated with the Site includes 74.35.44.017930 through 74.35.44.017937 and 74.35.44.017939.

The northwestern portion of the Site was developed prior to 1884 with buildings occupied by a blacksmith, glove factory, paint shop, three dwellings, and an outbuilding. The eastern portion of the Site was developed prior to 1884 with two dwellings, a warehouse, and storage building. Two sets of railroad tracks were constructed on the eastern portion of the Site from between 1899 and 1904. The western set of railroad tracks were removed between 1964 and 1971, and the eastern portion of the Site was converted to a surface parking lot. The other set of railroad tracks are located along the eastern Site boundary. The Site has historically been occupied by restaurants, barber shops/salons, bars, tailor shops, a hotel, department stores, a laundry business, a tire shop, a furnace company, and other commercial businesses.

The Site is currently developed with three two-story brick buildings consisting of office, retail, and bar facilities facing South Broadway Avenue. The eastern portion of the Site is developed as a paved municipal parking lot. A Site location map and Site sketch are attached as Figures 1 and 2, respectively.

B.2. Geology and Hydrogeology

The unconsolidated sediment in the Site vicinity is terrace deposits of Wisconsinan streams consisting chiefly of clean calcareous sand and gravel and includes minor beds of silt and clay in places (Hobbs, 1988). The uppermost bedrock unit in the Site vicinity is the Lower Ordovician, Prairie du Chien Group. The Group includes dolostone from the Shakopee and Oneota Formations. The dolostone in the Shakopee Formation is described as thin- to medium-bedded quartzose sandstone and shale with fine-grained quartzose sandstone at the base. The dolostone of the Oneota Formation is found in the lower part of the deposit, which is commonly thick-bedded (Olsen, 1988). The depth to bedrock in the Site vicinity is less than 50 feet below land surface (bls) (Olsen, 1988).



The depth to groundwater in the vicinity of the Site is estimated to be approximately 20 feet bls. According to the USGS 7.5-minute topographic map series, Rochester, Minnesota quadrangle, the surface gradient in the vicinity of the Site is generally to the east. Accordingly, the regional groundwater flow direction within the consolidated deposits in the vicinity of the Site may also be generally to the east towards the Zumbro River. However, the regional groundwater flow direction in the vicinity of the Site could not be ascertained, due to lack of available hydrogeological information. The local direction of groundwater flow may be affected by nearby streams, lakes, wells, and/or wetlands and may vary seasonally.

Based on previous investigations conducted at the Site, fill soils are present from immediately beneath the asphalt parking lot to depths ranging from about 2 feet bls to at least 18 feet bls. The fill soils consisted of a fine to coarse-grained poorly graded sand with varying amounts of gravel and debris. The observed debris consisted of varying amounts of concrete, brick, coal slag, and cinders at depths between 0 and 13 feet bls and was predominantly observed within the borings advanced on the northwest corner of the Site.

Either alluvial sands or bedrock underlay the fill soils. The alluvial sands consisted of fine to coarse grained sand with varying amounts of gravel, fines, and clayey sands. Bedrock consisted of alternating layers of sandy dolostone and sandstone, both from the Shakopee Formation. Groundwater was observed within the bedrock at depths between 21 and 24 feet bls.

B.3. Previous Site Investigations

The following environmental investigations have been completed at the Site:

- Phase I Environmental Site Assessment; Broadway at Center; South Broadway Avenue and East Center Street; Rochester, Minnesota; prepared by Braun Intertec, dated February 10, 2014.
- Environmental Investigation; Broadway at Center; South Broadway Avenue and East Center
 Street; Rochester, Minnesota; prepared by Braun Intertec, dated February 24, 2014.

Results from the Phase I environmental site assessment (ESA) indicated that buildings occupied by a blacksmith, glove factory and a paint shop, were located on Site in 1884. Additional past uses have included a laundry/dry cleaning business, an auto tire repair and vulcanizing business, a tin shop with a paint and oil room, a furnace company, furrier, and a business that used lime and cement.



Based on the finings from the Phase I ESA, an environmental investigation was completed at the Site and included the advancement of 24 soil borings and collection of soil, soil vapor and groundwater samples for analytical testing. Results from the investigation indicated the following:

- Fill soils are present across the Site to depths of up to 18 feet bls. Debris including concrete, brick, coal slag, and cinders were identified within the fill soil at several of the boring locations primarily in the northwest corner of the Site. The debris content in connection with elevated concentrations of polynuclear aromatic hydrocarbons (PAHs), arsenic, lead, mercury, and diesel range organics (DRO) detected within the fill will restrict off-Site reuse of fill soil and likely require disposal at a permitted landfill.
- Asbestos was not detected in the three debris samples submitted for this analysis.
- Groundwater was encountered at depths between 20 and 24 feet bls. Elevated concentrations of DRO, tetrachloroethene (PCE), and tetrahydrofuran were detected in the groundwater at the Site. It should be noted that tetrahydrofuran is a common component of polyvinyl chloride (PVC) glue and may be attributable to potential cross contamination associated with drilling operations (construction of temporary well) conducted during the geotechnical portion of this project. Based on the Site history and considering that tetrahydrofuran was not detected in the soil vapor samples or in the other groundwater samples collected during the environmental drilling, tetrahydrofuran was not considered a contaminant of concern at the Site at this time.
- None of the detected volatile organic compounds (VOC) concentrations in the soil vapor samples exceeded its 10x multiple of the Residential Intrusion Screening Value (ISV) with the exception of 1,3-Butadiene in all three soil samples. None of the detected 1,3-Butadiene concentrations exceeded is 100x multiple of the Residential ISV. 1,3-butadiene is a highly volatile compound and is a component of automobile and airplane exhaust, vehicle tire wear, wood combustion and cigarette smoke. According to an Agency for Toxic Substances and Diseases Registry (ASTR) study, 1,3-butadiene "is almost always present at very low concentrations in urban and suburban settings." Based on the proposed construction, which includes an underground parking structure beneath the entire Site and associated HVAC equipment to mitigate vehicle exhaust, it is our opinion that a sub-slab vapor mitigation system was not required at this time.



It was recommended that a RAP/CCP be prepared for the proposed redevelopment and that the Site be enrolled in the MPCA Voluntary Brownfield Programs to obtain applicable assurances from the MCPA regarding the soil and groundwater impacts identified at the Site.

The analytical results collected during the environmental investigation are included in Appendix B.

C. Project Overview

C.1. Proposed Development

As part of the project, the Site buildings will be razed and will be redeveloped with a 24 story building including a mixture of hotel, apartment, office and retail spaces. The project will also include construction of a multi-level parking ramp covering the east half of the block. One level of underground parking will be constructed beneath both the mixed used building and the parking ramp. The underground parking garage will have an exhaust ventilation system as part of the design.

Redevelopment plans are included in Appendix A.

C.2. Project Contacts

Project Developer

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General Contractor

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Excavation Contractor

TBD

MPCA Voluntary Program

520 Lafayette Road North St. Paul, MN 55155 Primary Contact: TBD

MPCA Emergency (State Duty Officer)

(651) 649-5451

Local Emergency

911

D. Response Action Plan

D.1. Site Conceptual Model

Fill soils are present across the Site to depths of up to 18 feet bls. Debris including concrete, brick, coal slag, and cinders were identified within the fill soil at several of the boring locations primarily in the northwest corner of the Site. The debris content in connection with elevated concentrations of PAHs, arsenic, lead, mercury, and DRO detected within the fill will restrict off-Site reuse of fill soil and likely require disposal at a permitted landfill. Impacted groundwater was detected at the Site; however, no groundwater dewatering is expected.



The impacted soil poses a potential risk to construction workers through dermal contact and poses a potential risk to the groundwater. The risk to construction workers will be mitigated through a worker Health and Safety Plan (HASP). In addition, redevelopment of the Site will result in construction of buildings, paved drives and parking areas throughout the Site with very little green space. This will limit the infiltration of stormwater through the contaminated soil.

The most recent soil vapor sampling indicated soil vapor results are below the Residential 10X ISV with the exception of 1,3-butadiene, which exceeded the Residential 10X ISV. Based on these results, the risk for vapor intrusion to utilities and the building appears minimal. In addition, the underground parking garage will have an exhaust ventilation system as part of the design.

D.2. Response Action Plan Objectives

The construction related response actions will be implemented to allow redevelopment of the Site for residential and commercial use; therefore, the Residential Soil Reference Values (SRVs) and Soil Leaching Values (SLVs) will be used to guide decisions regarding soil cleanup and re-use, implementation of engineered or institutional controls and construction of engineered remedial systems. Response actions regarding petroleum impacts also will be based on field screening criteria, specifically photoionization detector (PID) headspace readings.

Specifically for this redevelopment project, response actions are proposed that will meet the following objectives:

- Soil within greenspace areas within the accessible zone (i.e., 0 to 4 feet) will meet the Residential SRVs and SLVs; petroleum impacted soil within the accessible zone in greenspace areas will have PID readings less than 10 parts per million (ppm).
- Beneath pavement and buildings, two feet of soil meeting Residential SRVs is required. Petroleum impacted soil within 2 feet below pavement will have PID readings less than 200 ppm, and within 2 feet below floor slabs or within building backfill will have PID readings less than 10 ppm.
- Within utility corridors, contaminant levels will be less than the Industrial SRVs and petroleum impacted soil will have PID readings less than 10 ppm.



Based on the most recent soil vapor sampling conducted at the Site and proposed underground parking structures, no response actions are proposed to mitigate risk from soil vapor impacts and no response actions are proposed related to impacted groundwater at the Site as the redevelopment will not create pathways of exposure to groundwater.

D.3. Proposed Response Actions

During implementation of the response actions, the methods, procedures, sampling frequencies and soil reuse criteria described in Section D.4 will be used. As part of the redevelopment, contaminated soil will be excavated only to the extent necessary to allow construction of the new Site improvements, and contaminated soil will be left in place wherever possible. It should be noted that the majority if not all impacted fill soil will be removed to allow for construction of the underground parking ramps. Proposed response actions include the following:

- Building Footprint Excavation. A Braun Intertec representative will be on Site full time to conduct environmental monitoring to document soil conditions during excavation of the building footprint. It is anticipated that based on the depth of excavation required for construction of the underground parking ramps the majority if not all of the solid waste debris and impacted fill soil will be excavated and disposed at an off-site landfill. If excess fill soil with no indications of contamination is proposed for offsite reuse, it will be segregated and stockpiled in accordance with Section D.4.b so that samples for analytical testing can be collected. The soil samples will be chemically analyzed for VOCs, PAHs, resource conservation and recovery act (RCRA) Metals, DRO and gasoline range organics (GRO). The number of samples analyzed will be in accordance Section D.4.b. Confirmation soil samples will only be collected if impacted soil is encountered. Confirmation soil samples may be restricted due to shoring.
- Parking Ramp Excavation. A Braun Intertec representative will be on Site to conduct environmental monitoring to document soil conditions during excavation of the parking ramp footprint. It is anticipated that based on the elevated concentrations of compounds detected in the shallow fill soil that the upper 2-4 feet of fill soil will require excavation and off-site disposal and a permitted landfill. Excess fill soil with no indications of contamination excavated for the underground parking garage from areas with no identified environmental concerns will either be reused on Site without restriction, or if proposed for offsite use, will be sampled at a frequency of 1 sample per 1,000 cubic yards for characterization. The soil will be reused offsite provided that it meets the MPCA Best Management Practices criteria



for off-Site reuse of fill soil. Excess soil not meeting the offsite reuse criteria will be transported offsite for disposal at an appropriately permitted landfill. Confirmation soil samples will only be collected if impacted soil is encountered. Confirmation soil sampling will be completed in accordance with Section D.4.c. The number of confirmation samples may be restricted due to shoring.

- It is not anticipated that a vapor mitigation system will be part of the building design because the underground parking structure will have an exhaust venting system, and the most recent soil vapor sampling results did not indicate that contaminants were present at concentrations exceeding ten times a Residential ISV with the exception of 1,3-butadiene.
- No dewatering is anticipated during construction.
- If unexpected contamination is encountered during excavation activities, the MPCA will be notified and the CCP will be implemented.
- It is not anticipated that soil will need to be imported, but if the need arises, the soil will be evaluated using the methods and criteria described in Section D.4.e.

D.4. Methods and Procedures

D.4.a. Soil Screening

A Braun Intertec environmental technician with asbestos inspector credentials will be on Site during excavation activities. Soils will be observed for the presence of visual and olfactory indications of contamination. Direct olfactory evaluation of contaminated soil is not recommended for safety reasons, but incidental observations will be noted and acted on. The technician will follow MPCA-approved headspace methodology using a PID equipped with a 10.6-electron-volt lamp to monitor soil for the presence of organic vapors. Initially, a minimum of one sample for headspace analysis will be collected for every 10 cubic yards of soil removed. If PID headspace readings are below background and soil appear consistent (i.e., similar soil type, depth, coloring, debris content, etc.) through an area being excavated, PID screening will be lessened so that one PID sample will be collected for every 20 to 25 cubic yards that is excavated. In addition, if the excavated soil is being transported offsite for disposal, PID screening will be lessened so that one PID sample will be collected for every 20 to 25 cubic yards that is excavated. Conversely, if PID readings indicate that impacted soil is present in the excavation, PID screening frequency will be increased as needed to evaluate the extent of the impacts and to assist with soil segregation. Screening results will be documented.



The headspace procedure is used to field-screen organic vapor levels in soils. The procedure consists of half-filling a new quart-sized sealable bag with a soil sample. The bag is quickly closed and headspace development is allowed to proceed for at least 10 minutes. The bag is shaken vigorously for 15 seconds, both at the beginning and the end of headspace development. After headspace development, the PID probe is inserted into the bag to one-half the headspace depth. The highest reading observed on the PID is then recorded.

D.4.b. Stockpile Procedures

If it becomes necessary to stockpile impacted soils prior to reuse on Site or for off-Site disposal, the soils will be staged on Site in one or more stockpiles. The stockpiles will be numbered, a sketch will be made of each stockpile location, and a description will be made of the type of material and where it originated. Soils from different areas with suspected different contaminants, soils exhibiting different visual or olfactory characteristics, or soils with significantly different PID measurements will be stored separately.

Stockpiled soils will be placed on polyethylene sheeting or other impervious surface and covered with polyethylene sheeting at the end of each workday and they will be secured in place. The stockpiles will be bermed to prevent storm water run-on and/or runoff.

If laboratory analysis of stockpiled soils is required, the number of stockpile samples collected will be in accordance with stockpile sampling requirements of the MPCA Petroleum Remediation Program, specifically:

Cubic Yards of Soil in Stockpile	Number of Grab Samples
<500	1 per 100 cubic yards
501-1,000	1 per 250 cubic yards
1,001 or more	1 per 500 cubic yards

D.4.c. Confirmation Sampling and Analytical Testing

If confirmation sampling is conducted, confirmation soil samples will be collected from the excavation base and sidewalls in the area where indications of contamination were found.



If laboratory analysis of the confirmation samples is needed, the number of soil samples will be collected based on the following:

Base of Excavation (ft²)	Number of Samples	Sidewalls (ft²)	Number of Samples
<500	2	<500	4
500-1000	3	500-1000	5
1000-1500	4	1000-1500	6
1500-2500	5	1500-2000	7
2500-4000	6	2000-3000	8
4000-6000	7	3000-4000	9
6000-8500	8	>4000	1 per 45 linear feet
8500-10890	9		

Braun Intertec will discuss the need for laboratory analytical tests to characterize the unexcavated soils with the MPCA prior to initiating any laboratory analyses. In such situations, analytical parameters will be analyzed for parameters in accordance with the scheme described for stockpile sampling based, field observations and discussions with the MPCA.

D.4.d. Soil Disposal and/or Reuse

Decisions regarding on Site and off-site reuse will be based on the following criteria:

- Off-Site reuse of soil from the Site will be in accordance with the MPCA's Best Management Practices for Off-Site Reuse of Excess Fill from Development Sites and will meet the following criteria: soil will be free from solid waste, will not exhibit field indications of contamination, PID readings less than 10 ppm, contaminant concentrations will be less than the Residential SRVs and SLVs and no DRO or GRO greater than 100 milligrams per kilogram (mg/kg) will be present.
- Soil will be reused on Site without restriction, provided there are no indications of contamination based on field screening and contaminant concentrations are less than the Residential SRVs. In greenspace areas, contamination concentration also will be less than the SLVs.
- Impacted fill soil might be reused at the Site provided it meets the stated criteria:



Thin-spread beneath paved surfaces:

- PID headspace readings less than 200 ppm.
- Contaminant levels are less than the Residential SRVs.
- Debris content is less than 5 percent (%) by volume.
- Maximum thickness of four inches.

Green Space Areas

- PID headspace readings are less than 10 ppm.
- Contaminant levels are less then Residential SRVs and SLVs (for VOCs or other mobile contaminants).
- Debris content is less than 5% by volume.

Utility Corridors

- PID headspace readings are between background and 10 ppm.
- Contaminant levels are less than the Industrial SRVs

Beneath Buildings or Within Building Backfill

- Contaminant levels are less than Residential SRVs
- PID readings are less than 10 ppm.
- Soils containing more than 5 percent (%) by volume construction debris or soils containing asbestos containing material (ACM) will not be reused on Site and will be disposed of at an appropriately permitted disposal facility.
- Soil that cannot be reused on Site as restricted fill because of space constraints or because soils
 exhibit contaminant concentrations in excess of the proposed standards described above will be
 transported for offsite disposal.

D.4.e. Engineering Controls

In the event that impacted soil remains at the Site with contaminant concentrations in excess of the Residential SRVs, a soil buffer consisting of soil with contaminant concentrations less than the Residential SRVs will be established. In greenspace areas, the soil buffer will be at least 4 feet thick and beneath paved areas or buildings, the buffer will be 2 feet thick.

Within utility corridors, if soil with PID readings greater than 10 ppm is present in the trench base or sidewalls, a vapor barrier will be installed around the utility to limit migration of soil vapors into the utility trench. The vapor barrier will consist of 6 mil polyethylene sheeting that will be "burrito wrapped" around the utility and approximately 2 feet of the backfill or pipe bedding material.



D.4.f. Soil Import

Fill sources will be considered on a case-by-case basis and evaluated for the potential presence of contaminants in the material. If the fill source is from a site with no environmental concerns, such as native pit run material or from a residential development with no underground storage tanks (USTs) or other environmental concerns, no analytical testing of the material will be conducted. Acceptance of fill from other sources with potential environmental concerns will be made on a case-by-case basis. As part of the decision making process, the land-use history of the source facility will be evaluated, existing environmental reports will be reviewed, the geotechnical suitability of the material will be assessed, and existing analytical data will be reviewed. If additional analytical testing of the material is deemed warranted after input from the MPCA, samples will be collected at a frequency of at least one sample per 1,000 cubic yards of material. Analytical parameters will be determined based on historic use of the source facility and the Site contaminants of concern. Analytical results will be compared to the Residential SRVs and SLVs. Environmental monitoring of fill soils as they are loaded into trucks from the source facilities will be conducted on a case-by-case basis.

Based on the current redevelopment plan, we are not anticipating the need to impact fill to the Site.

D.4.g. Short Term Site Controls

Erosion Control

The contractor will be responsible for implementation of appropriate erosion controls in accordance with general permit requirements for stormwater control at construction sites. This typically includes installation of silt fences at the project boundaries and limits of excavations to control erosion during work on-site. In addition, the contractor will be responsible for providing rock construction entrances or performing street sweeping to prevent dummy or dusty conditions on city streets.

Site Security

Access to the construction Site will be restricted and will be the responsibility of the general contractor.

E. Construction Contingency Plan

In the event indications of contamination or regulated waste are unexpectedly encountered during construction, this CCP will be implemented.



For the purposes of this CCP, indicators of potentially contaminated soil, groundwater or surface water include, but are not limited to the following:

- Odor, including gasoline, diesel, creosote (odor of railroad ties), mothballs, or other chemical-like odor.
- Soil-stained green or black (but not because of organic content), or with dark, oily appearance, or any unusual soil color or texture.
- A rainbow color (sheen) on surface of water or soil.

Indicators of regulated wastes include, but are not limited to the following:

- Cans, bottles, glass, scrap metal, or wood (indicators of solid waste and a possible dump).
- Concrete or asphalt rubble (indicators of demolition waste).
- Roofing materials, shingles, siding, vermiculite, floor tiles, or any fibrous material (indicators
 of demolition waste that could contain asbestos, lead or other chemicals).
- Culverts or other pipes with tar-like coating, insulation or transite (indicators of asbestos).
- Ash (ash from burning or regulated materials may contain lead or other chemicals).
- Sandblast residue (could contain lead or other metals).
- Treated wood, including, but limited to, products referred to as green-treated, brown-treated and creosote (treated wood disposal is regulated).
- Chemical containers such as storage tanks, drums, filters and other containers (possible sources of chemical contaminants).
- Old basements with intact floor tiles or insulation (could contain asbestos), sumps (could contain chemical waste), waste traps (could contain oily waste) or cesspools (could contain chemical or oily wastes).



E.1. Notification Requirements

In the event that unexpected contaminated materials or debris are encountered during construction when the environmental consultant is not on Site, work in the area shall cease immediately, and the work area shall be secured. Work outside of the vicinity of the discovery area can continue if conditions remain safe to do so for project personnel and the surrounding community. The contractor shall immediately notify the owner and/or the owner's representative. At the owner's and/or owner's representative's request, the environmental consultant will mobilize to the Site in the event that contamination is encountered. At this time, the soils will be assessed in-situ as part of a preliminary reconnaissance for the presence of contamination using both visual and olfactory indications of contamination, as well as laboratory analysis.

In the event contaminated materials are encountered during construction, a release may need to be reported to the State Duty Officer in accordance with Minnesota Statute 115.061.

E.2. Preliminary Reconnaissance

If contamination or regulated waste is unexpectedly encountered, the environmental consultant will mobilize to the Site to conduct a preliminary reconnaissance. During the preliminary reconnaissance, samples of the potentially impacted soil will be collected from any stockpiles or from the excavation base and sidewalls for headspace screening using a PID using MPCA recommended methodologies. A minimum of one sample for headspace analysis will be collected for every 10 cubic yards of material removed. Visual and indirect olfactory indications of contamination will be noted. Screening results will be documented, and Site photographs will be taken, as appropriate.

As part of the preliminary reconnaissance, any potentially contaminated soil that is stockpiled will be placed on polyethylene sheeting or other impervious surfaces and covered with polyethylene sheeting that is secured in place. Staging areas for potentially impacted soil or material will be clearly marked.

The results of the preliminary reconnaissance will be provided to the owner and/or the owner's representative. The contractor will not be allowed to continue to work in the area until the type(s) of contamination is identified and an appropriate response action is defined by the owner and/or the owner's environmental representative.



E.3. Potential Response Actions

In general, after conducting the preliminary reconnaissance and assessing the type of contamination, environmental monitoring will be conducted during excavation of potentially contaminated materials. The results of the environmental monitoring will be used to segregate and stockpile the potentially contaminated material. Field methods and procedures, analytical testing and decisions regarding soil disposition will be consistent with those described in Section E.2.

If potential ACM is encountered, no excavation work will be conducted until the results of polarized light microscopy (PLM) testing are available. If ACM is detected, procedures established in Section E.3.b. will be followed. Response actions, listed by contaminant/waste type, to manage unidentified contamination that is encountered during construction are detailed below.

E.3.a. Petroleum-Contaminated Soils

If petroleum-contaminated soils are identified during construction, soils will be segregated and handled in accordance with MPCA Petroleum Remediation Guidance Document 3.01 "Excavation of Petroleum Contaminated soil and Tank Removal Sampling."

E.3.b. Debris and Asbestos-Containing Materials

In the event that debris suspected of containing asbestos is encountered during earthwork activities, it will be evaluated in-situ for the presence of asbestos by bulk sampling and analysis by PLM. If ACM is encountered, protocol outlined in the July 1999 MPCA Asbestos Guidance on Excavation Projects will be followed including implementation of an Exposure Control Plan (ECP). An ECP will be prepared if needed, upon request. In addition, as the debris is excavated and removed, if encountered, it will be properly recycled or soil containing greater than 10% debris will be disposed. ACM will be properly disposed of offsite; no soil containing ACM will be reused on Site.

E.3.c. Non-Petroleum-Impacted Soil

Soils that exhibit non-petroleum impacts will be segregated, stockpiled, and sampled. The results of the analytical testing will be compared to the reuse criteria in Section D.4.d.

E.3.d. Storage Tanks or Drums

In the event that drums or other storage containers are encountered during earthwork activities, they will be removed and their condition evaluated by appropriately trained personnel. If the containers are determined to be in poor condition, the materials will be transferred to a new drum that is in good condition. The drums will be placed in a secure location. Containerized materials will be evaluated, tested, and properly disposed. Soil from the area around the container will be screened for indications of



contamination. Potentially impacted soil will be segregated and stockpiled. Soil samples will be collected from stockpiled materials for chemical analyses and confirmation soil samples will be collected from remaining in-place soil.

If a possible underground storage tank (UST) indicated by a metal or concrete surface is encountered during excavation activities, the area around the possible underground structure will be carefully excavated. The underground structure will be tested to evaluate the depth to bottom or the presence of liquid. If liquid is present, further testing will be conducted to evaluate its contents. Liquid will be removed by pumping prior to removal and disposal of the structure. All UST contents will be handled in accordance with MPCA and Occupational Safety and Health Administration (OSHA) requirements. The UST will be removed by a licensed UST removal contractor and will be completed in accordance with MPCA requirements. Soil surrounding the tank or structure will be monitored for possible impacts and sampled for chemical analyses in accordance with MPCA, Petroleum Remediation Program, Guidance Document #3-01.

E.3.e. On-Site Wells and Septic Systems

All wells must be sealed by a licensed well contractor in accordance to Minnesota Department of Health (MDH) regulations. Septic systems also should be properly abandoned in accordance with local and state code.

F. Site Health and Safety Plan

Braun Intertec will prepare a HASP for its personnel that will be on site. Site contractors will be provided with information regarding the locations of potential soil contamination, including this RAP/CCP, as they become available.

G. Schedule

Construction is anticipated to begin July 2014.



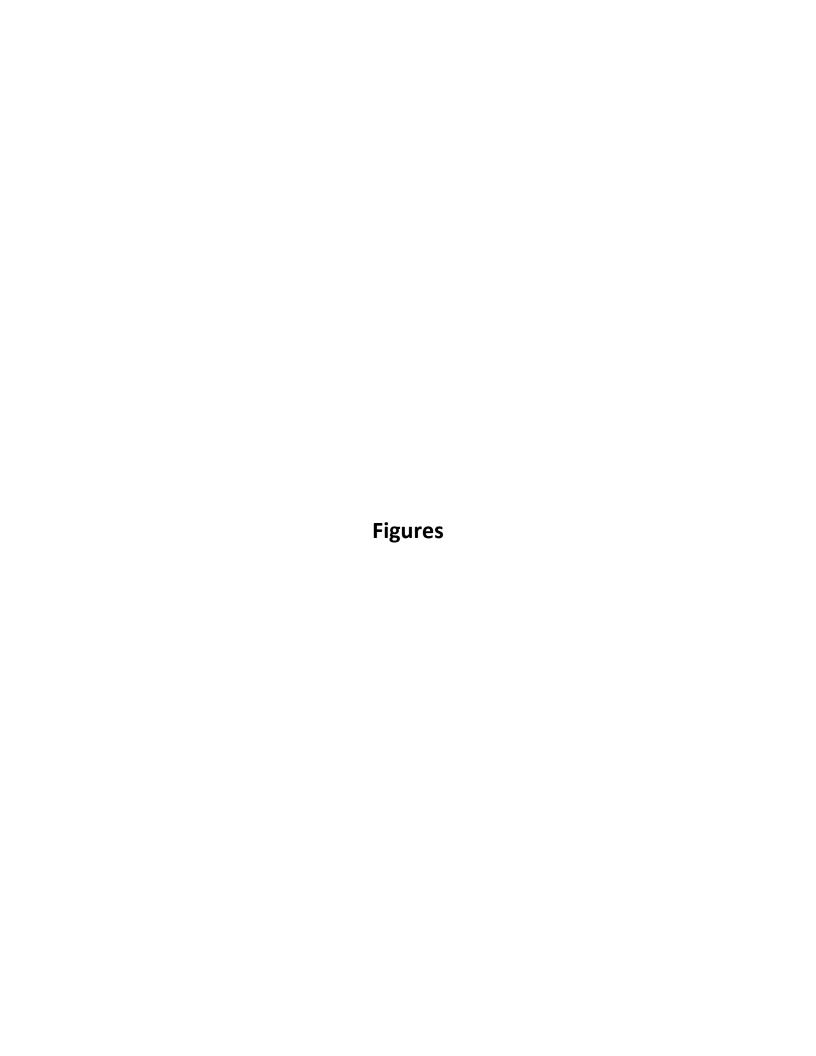
H. Reporting

Upon completion of construction activities and chemical analyses, a RAP Implementation Report will be prepared documenting methods and results of the soil monitoring activities. The report will be submitted to the MPCA and will request a No Further Action letter and approval of the response actions as appropriate.

I. Standard of Care

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

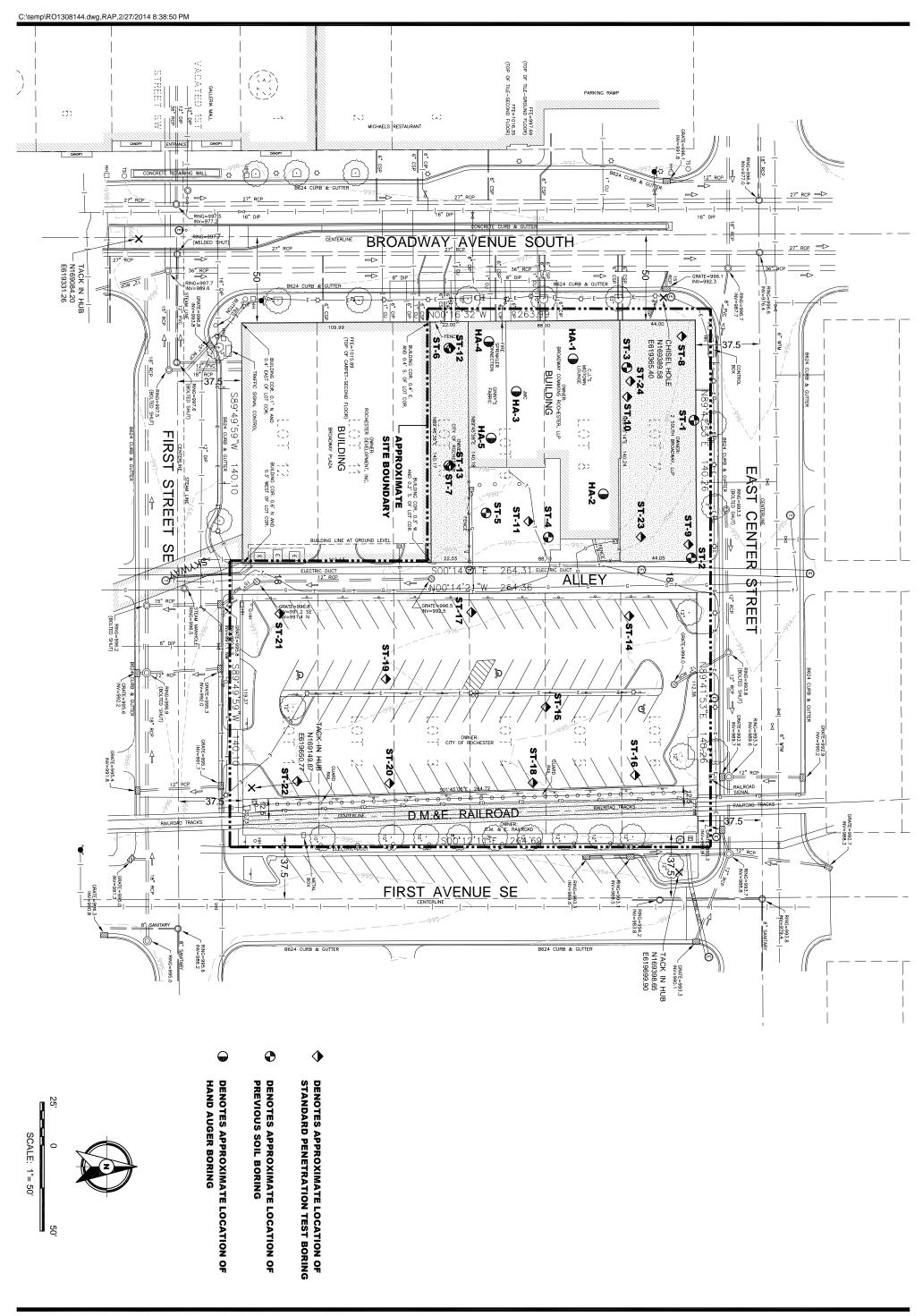


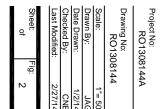


Scale: 1 in = 2,000 ft FER Drawn By: 1/21/14 Date Drawn Checked By: KJH Last Modified: 1/21/14

BROADWAY AT CENTER BROADWAY AVENUE AND CENTER STREET ROCHESTER, MINNESOTA

11001 Hampshire Avenue So. Minneapolis, MN 55438 PH. (952) 995-2000 FAX (952) 995-2020

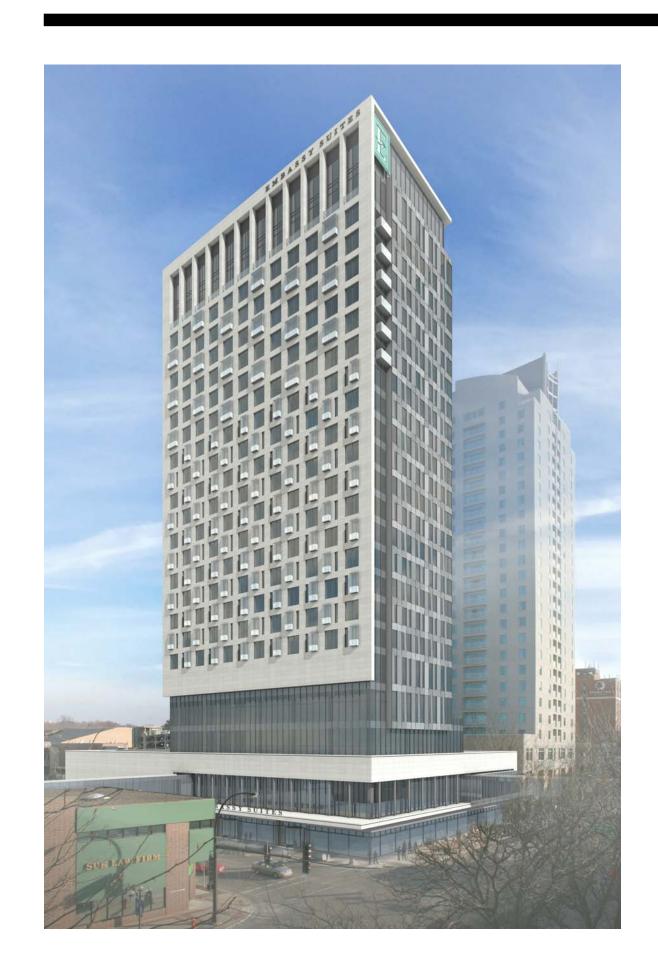




SITE SKETCH RESPONSE ACTION PLAN BROADWAY AT CENTER BROADWAY AVENUE AND CENTER STREET ROCHESTER, MINNESOTA

Appendix A Proposed Development Plans

BROADWAY AT CENTER











BROADWAY AT CENTER



Architecture | Engineering | Planning
Hammel, Green and Abrahamson, Inc.
202 1st Avenue SW
Rochester, Minnesota USA 55902
Telephone 507.281.8600 Facsimile 507.281.8688

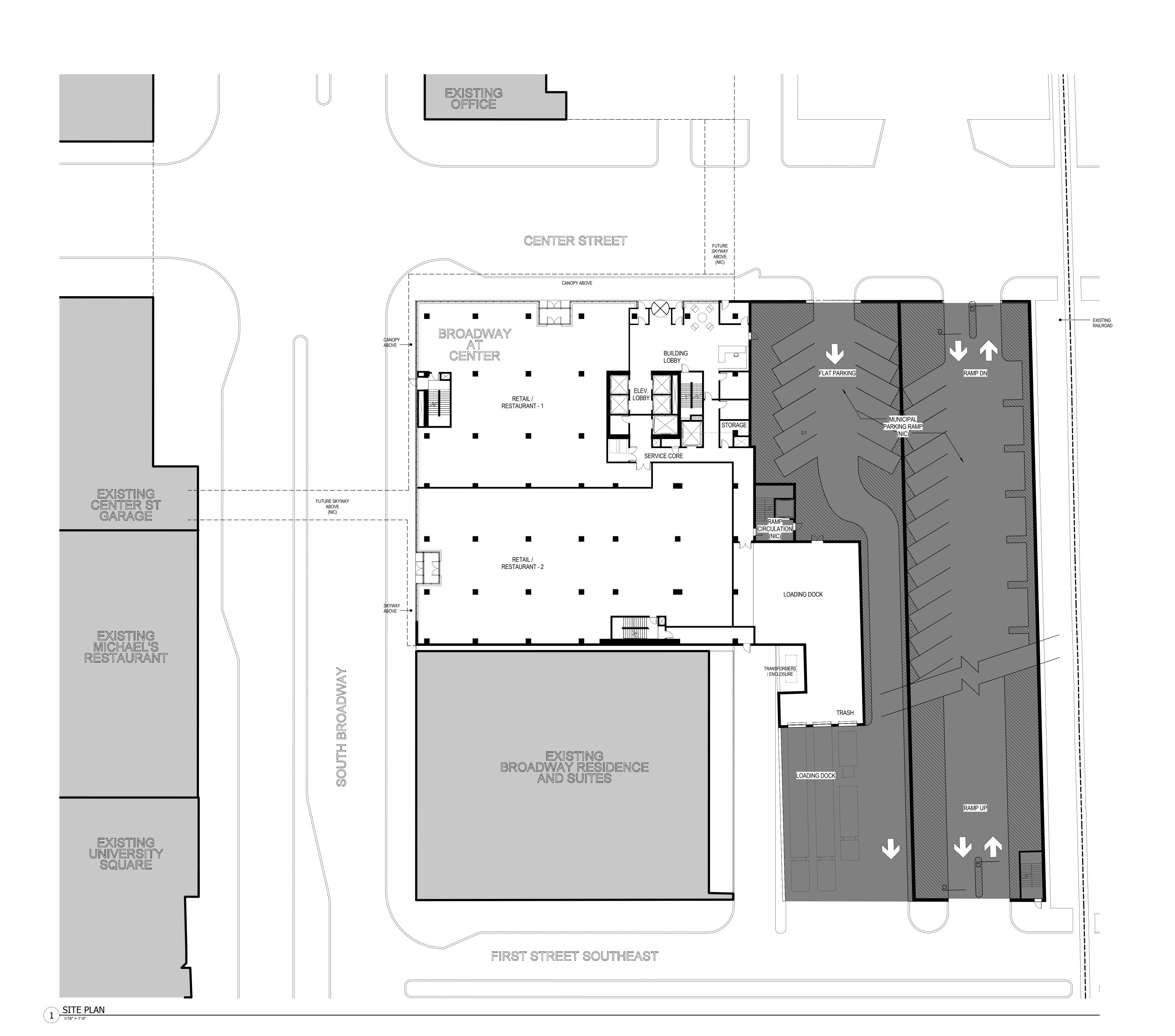
hga commission number: 1446-047-02 DECEMBER 19, 2013

SCHEMATIC DESIGN PRICING PACKAGE

DRAWING INDEX NUMBER SHEET NAME 1-GENERAL A000 COVER SHEET ARCHITECTURAL SITE PLAN 4-ARCHITECTURAL BASEMENT LEVEL FLOOR PLAN FIRST LEVEL FLOOR PLAN SECOND LEVEL FLOOR PLAN THIRD LEVEL FLOOR PLAN FOURTH LEVEL FLOOR PLAN FIFTH LEVEL FLOOR PLAN SIXTH LEVEL FLOOR PLAN SEVENTEENTH LEVEL FLOOR PLAN TWENTY-THIRD LEVEL FLOOR PLAN TWENTY-FOURTH LEVEL FLOOR PLAN A225 ROOF LEVEL FLOOR PLAN EXTERIOR PERSPECTIVES BUILDING SECTIONS Grand total: 15

NOTFORTION





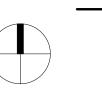
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ARCHITECTURAL SITE PLAN

DATE: JANUARY 2, 2013

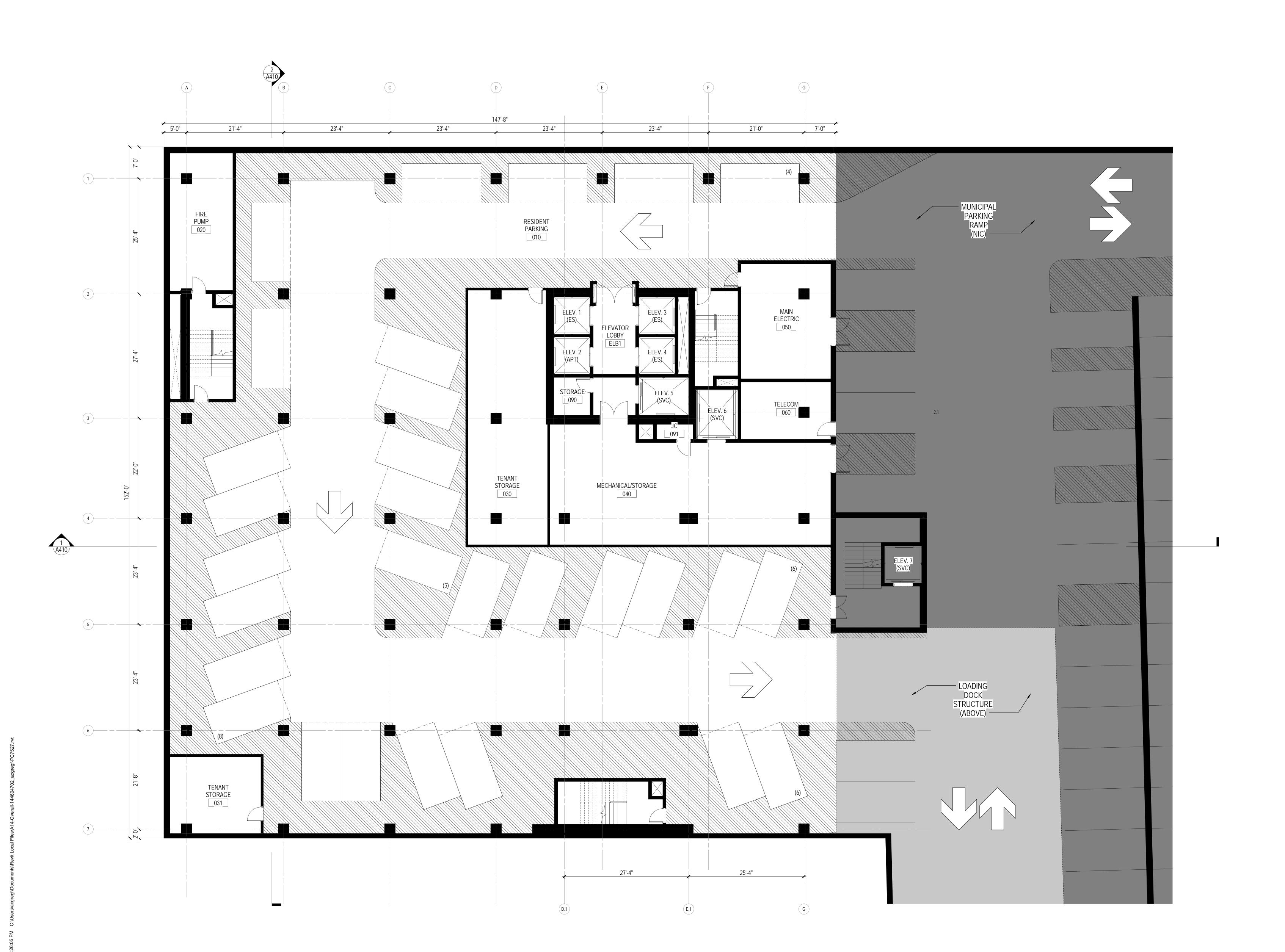
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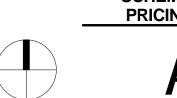
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DATE: JANUARY 2, 2013

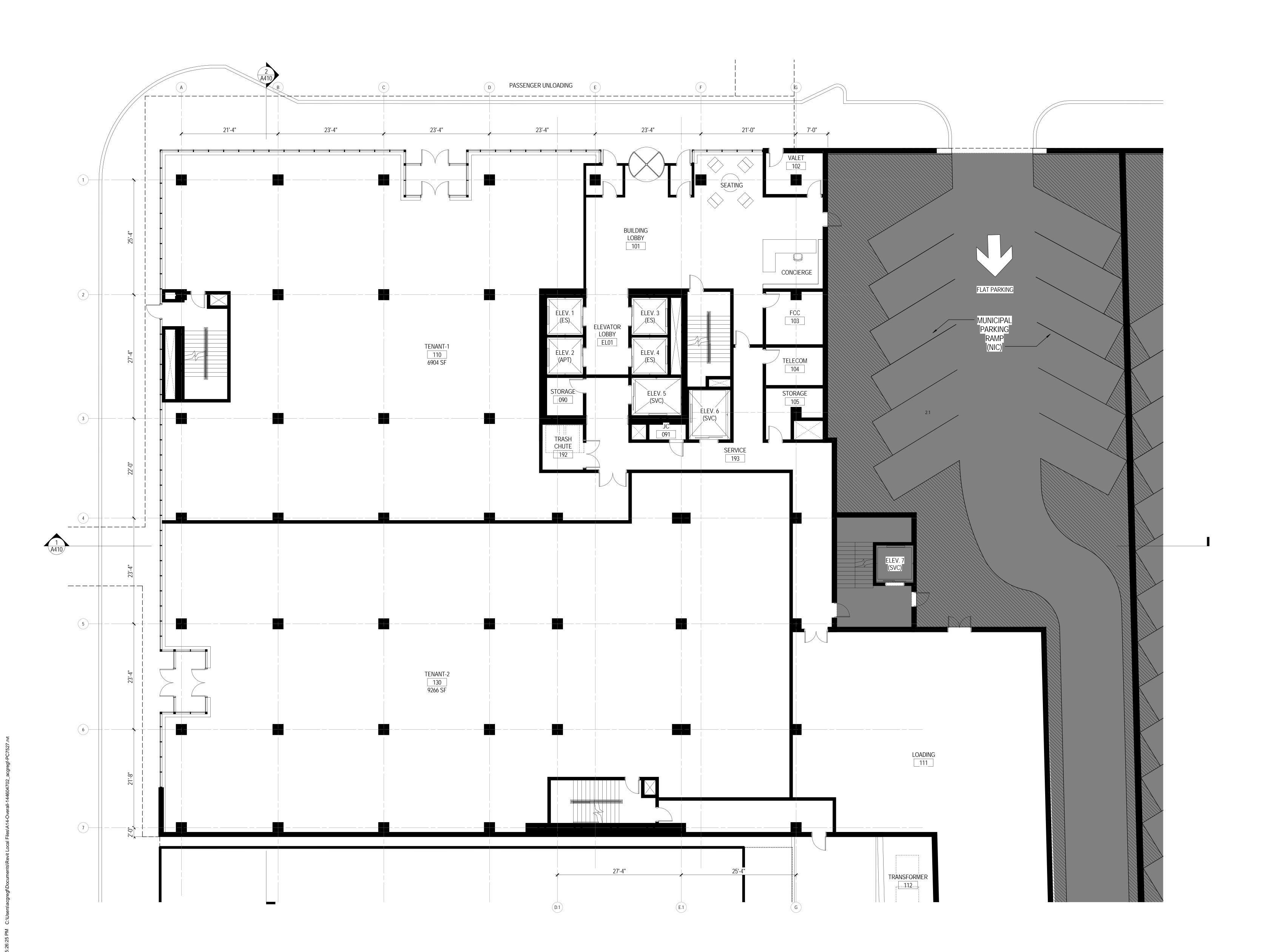
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DATE: JANUARY 2, 2013

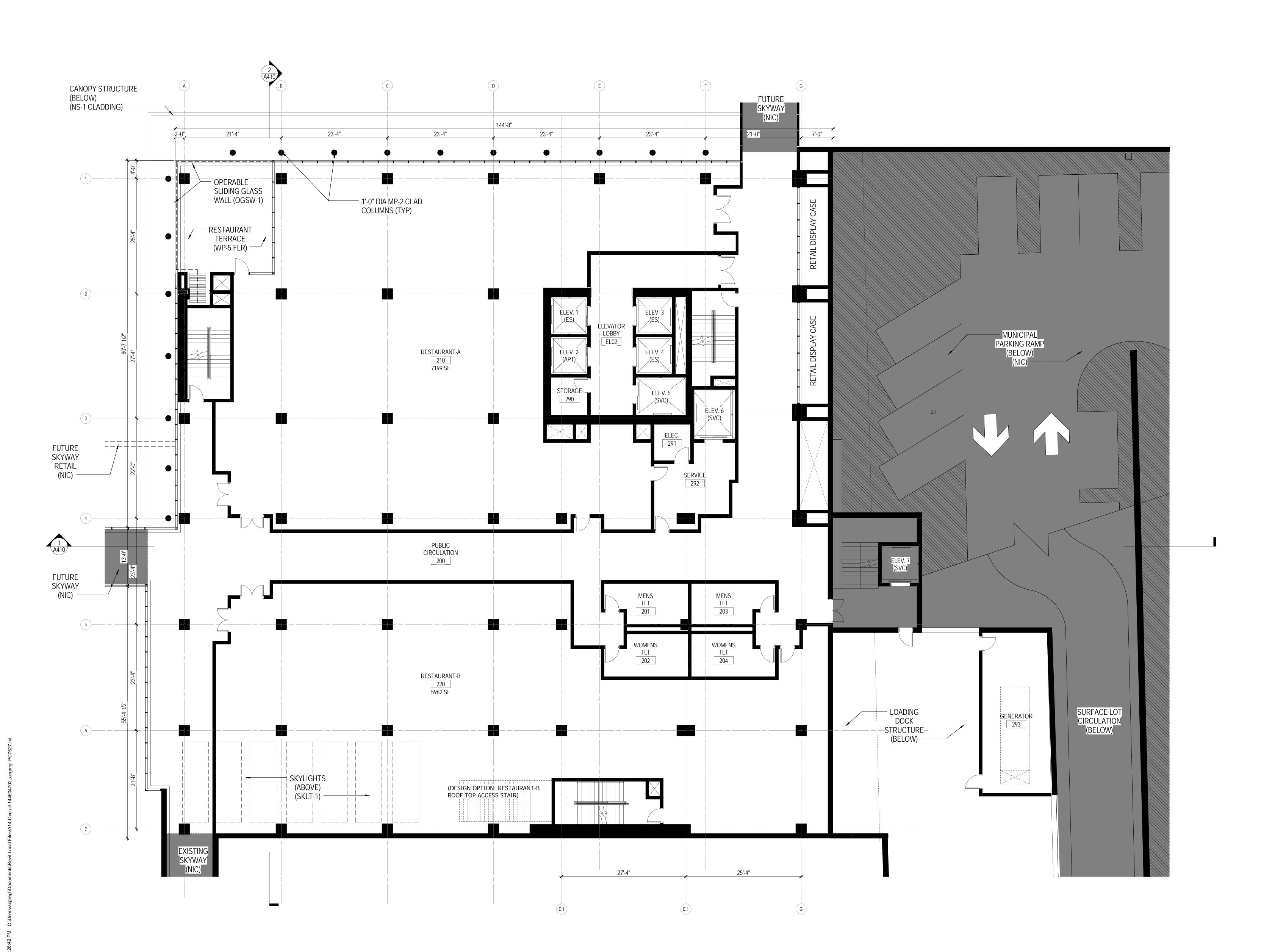
SCHEMATIC DESIGN
PRICING PACKAGE



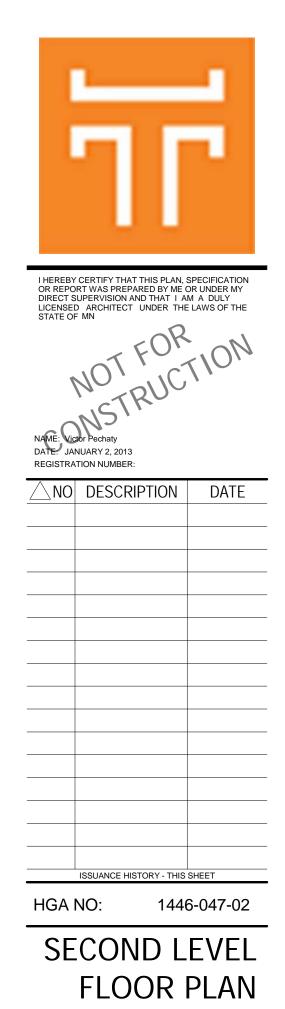
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1 FIRST LEVEL FLOOR PLAN
1/8" = 1'-0"





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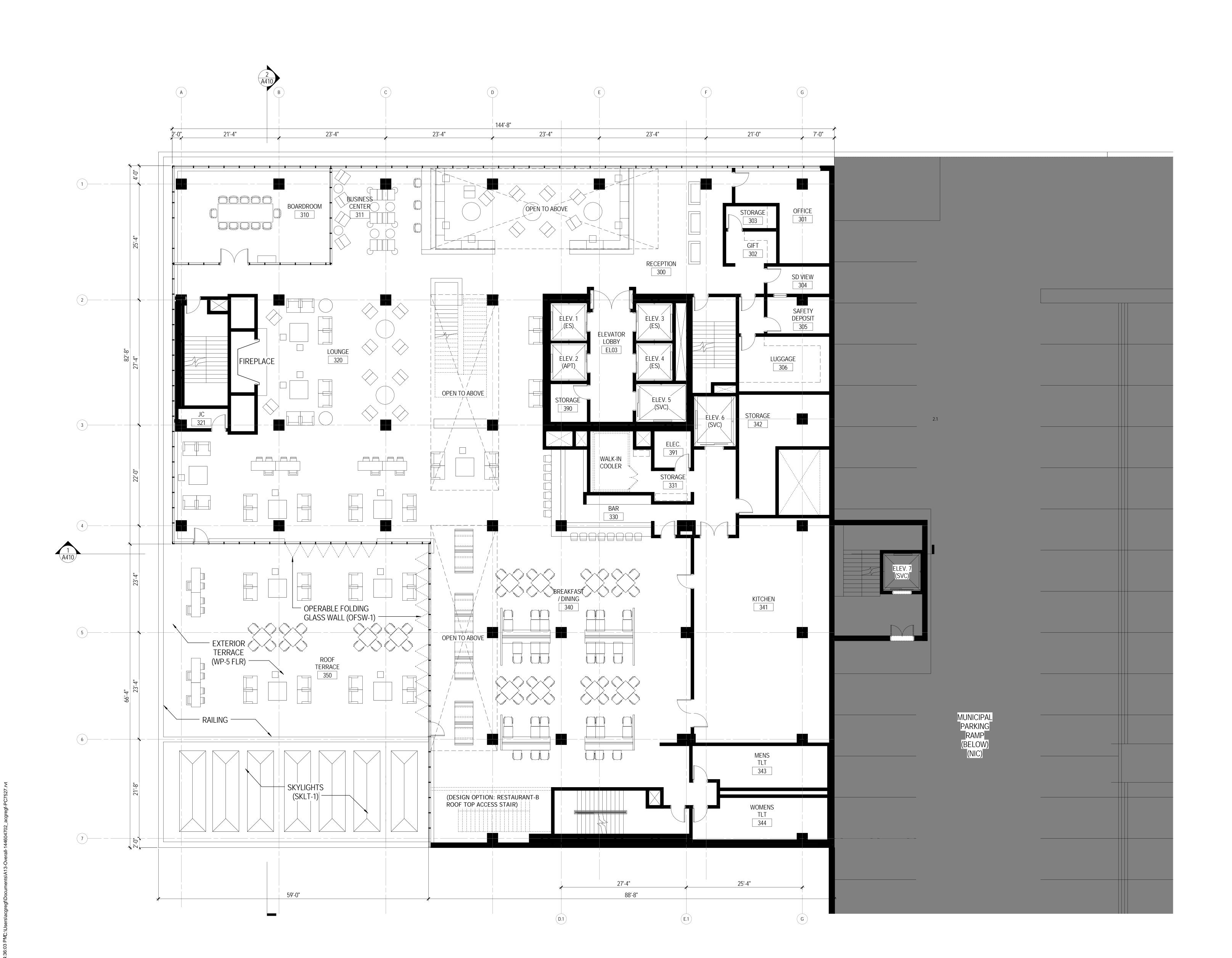


SECOND LEVEL FLOOR PLAN

1/8" = 1'-0"

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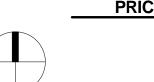


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DATE: DECEMBER 19, 2013

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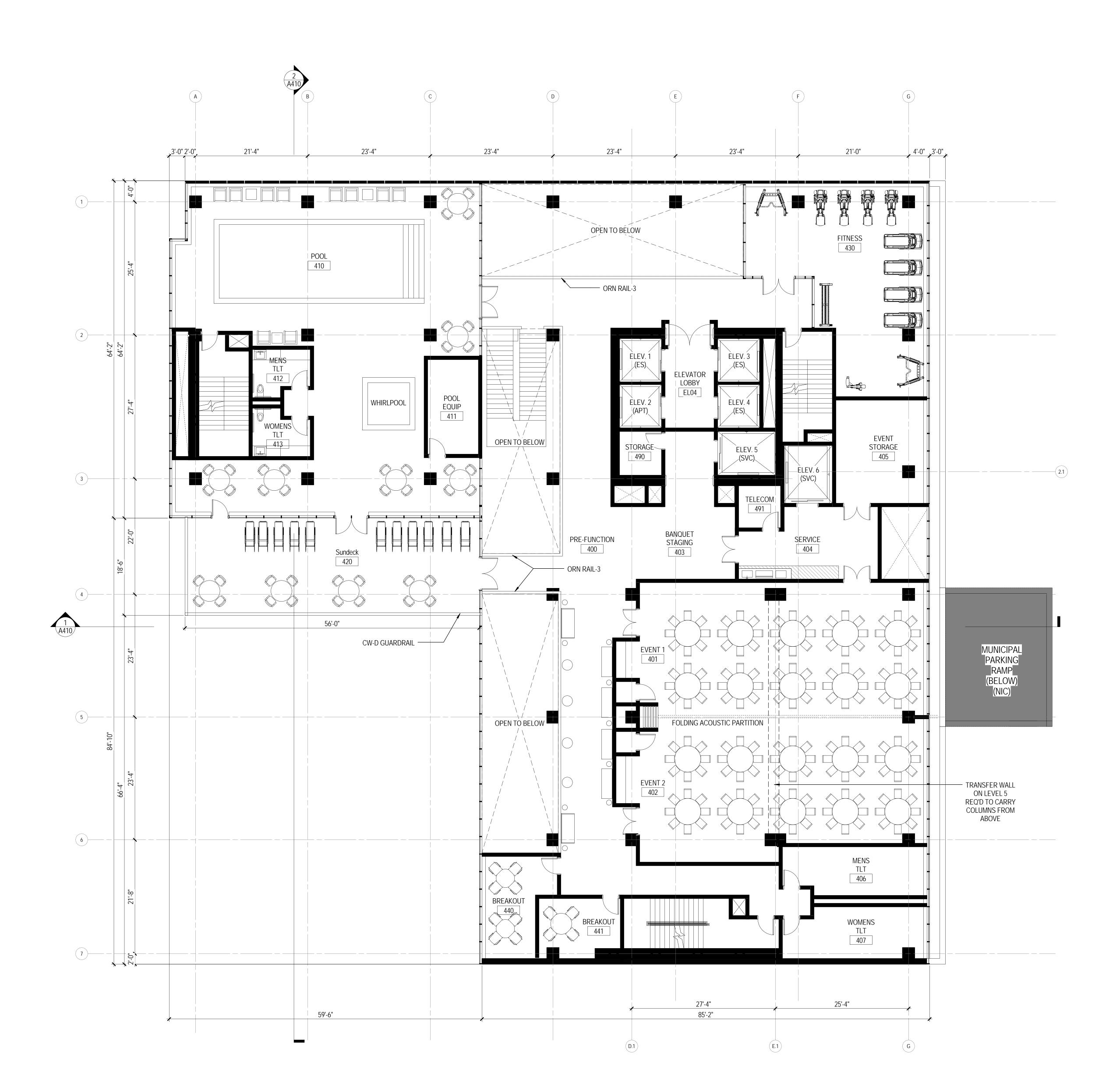
A203

1 THIRD LEVEL FLOOR PLAN

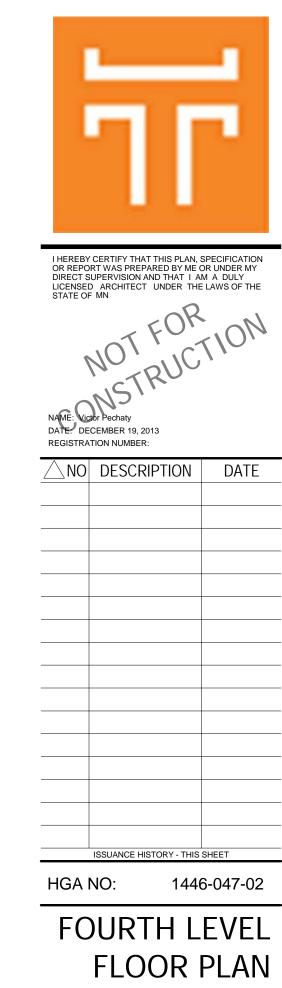
1/8" = 1'-0"

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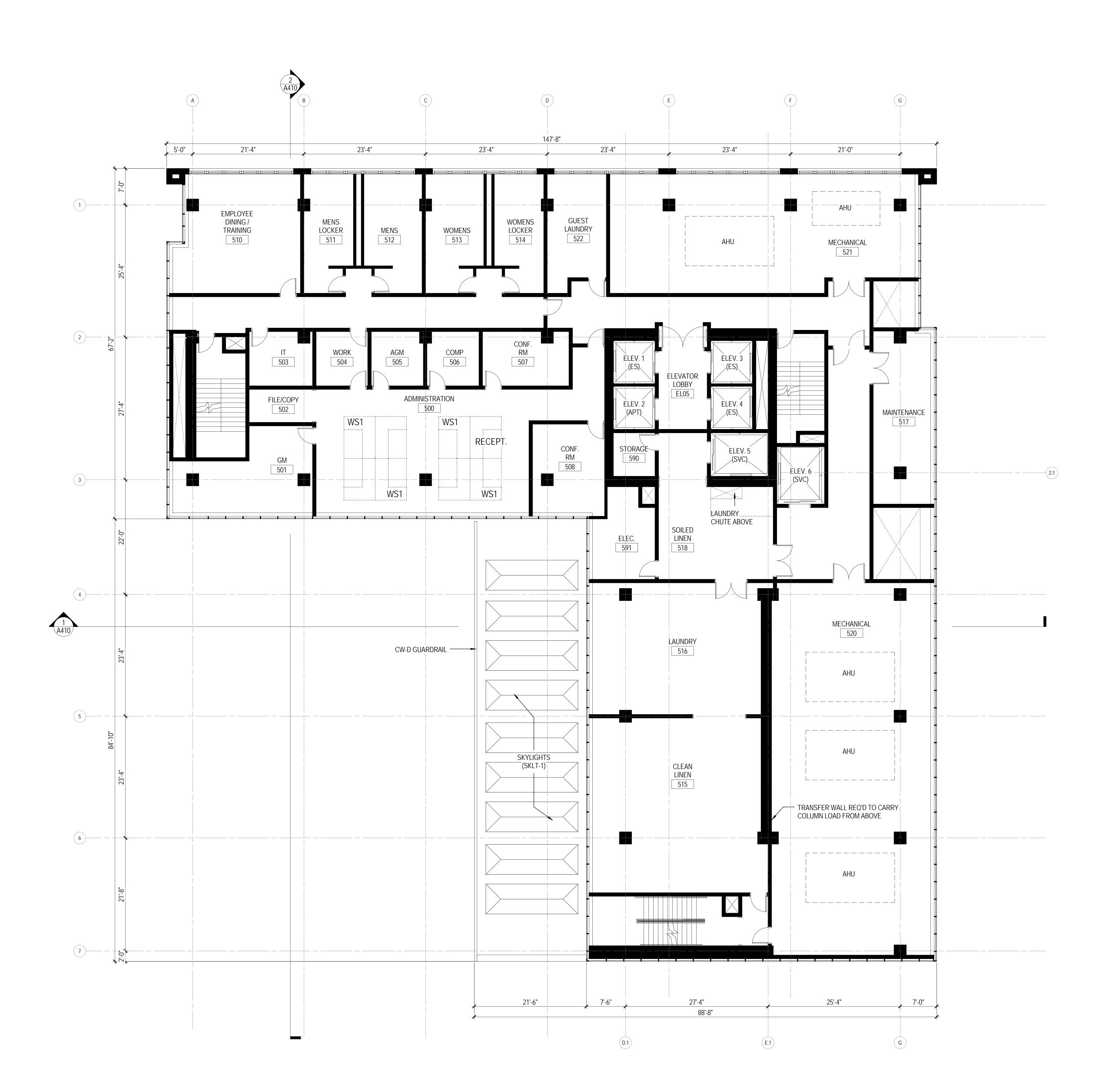
A20

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1 FOURTH LEVEL FLOOR PLAN

1/8" = 1'-0"





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NAME: Victor Pechaty
DATE: DECEMBER 19, 2013
REGISTRATION NUMBER:

NO DESCRIPTION DATE

FIFTH LEVEL FLOOR PLAN

DATE: DECEMBER 19, 2013

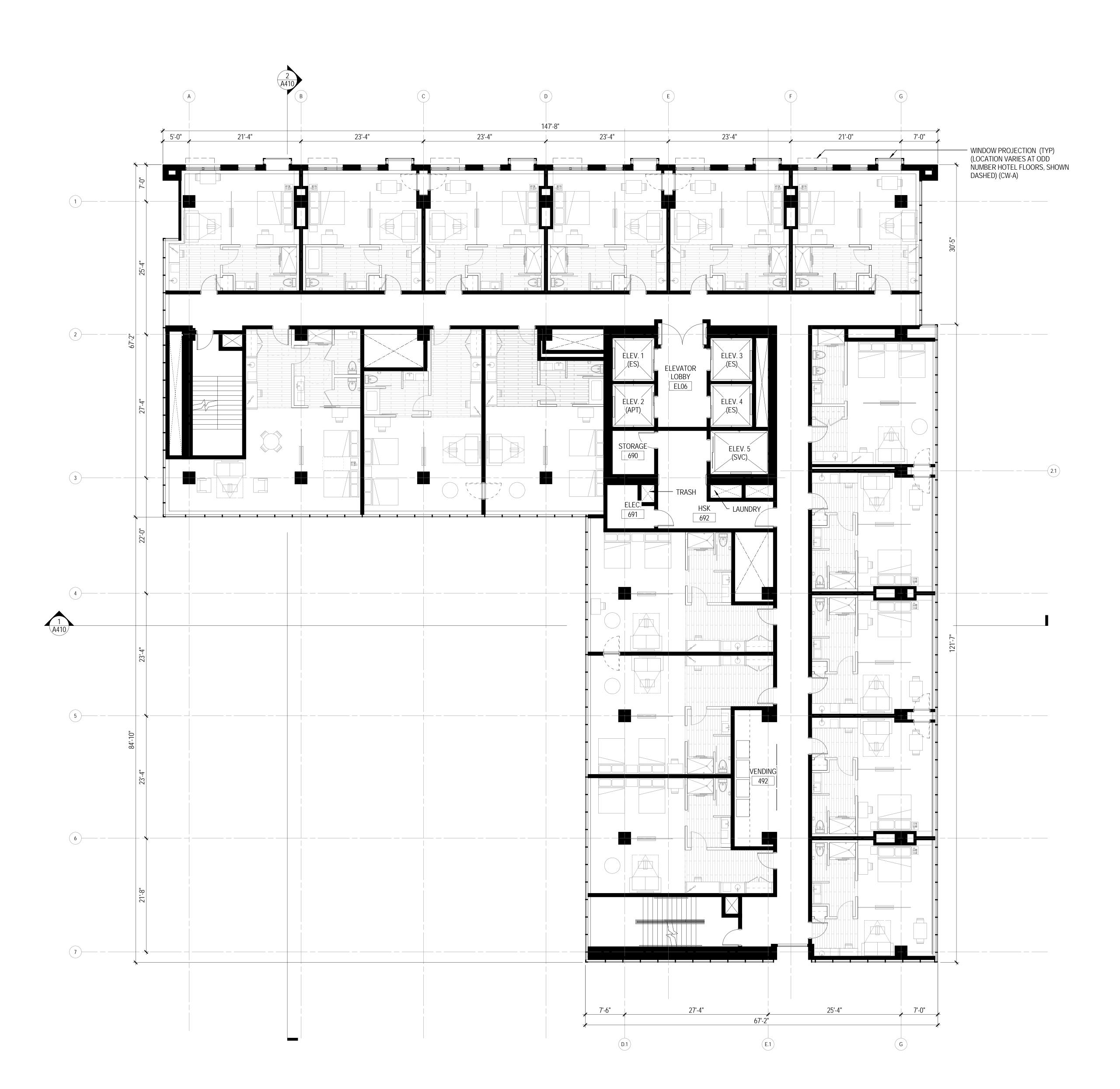
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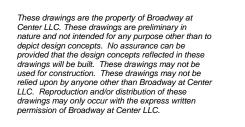
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SIXTH LEVEL FLOOR PLAN

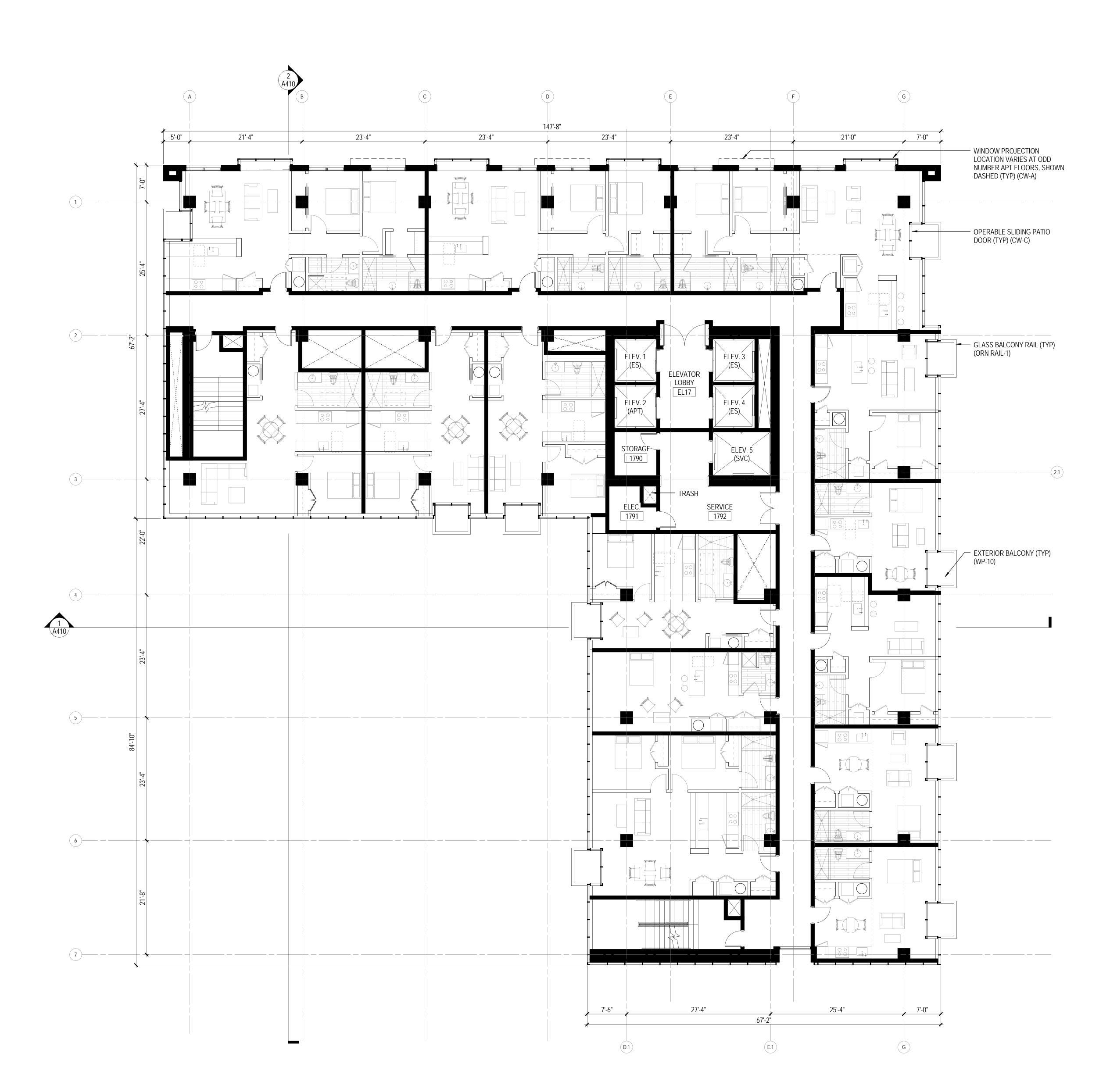
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A206





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NAME: Victor Pechaty
DATE: DECEMBER 19, 2013 REGISTRATION NUMBER:

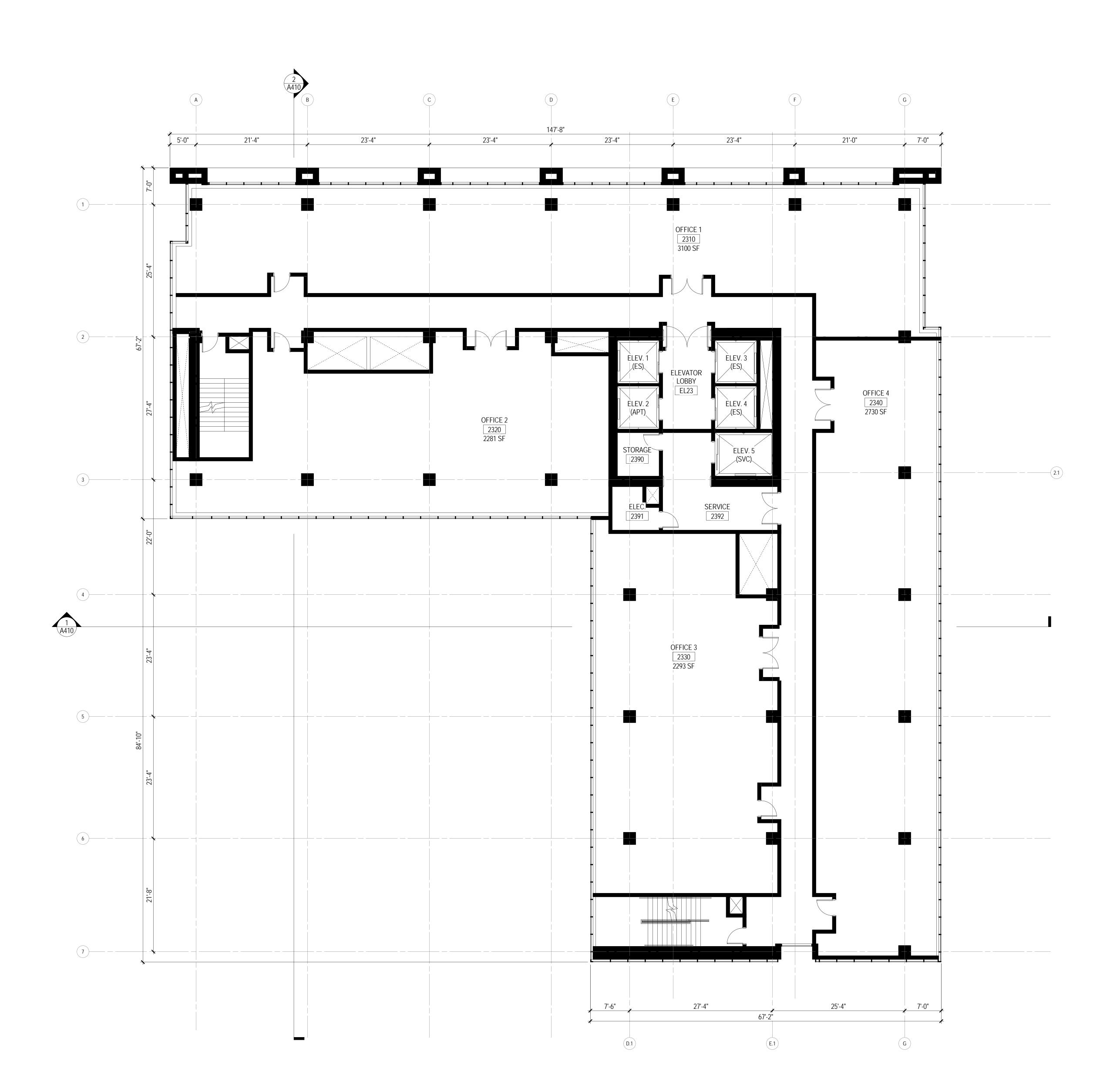


SEVENTEENTH LEVEL FLOOR PLAN

DATE: DECEMBER 19, 2013 SCHEMATIC DESIGN PRICING PACKAGE







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NAME: Victor Pechaty
DATE: DECEMBER 19, 2013
REGISTRATION NUMBER:



HGA NO: 1446-047

TWENTY-THIRD LEVEL FLOOR PLAN

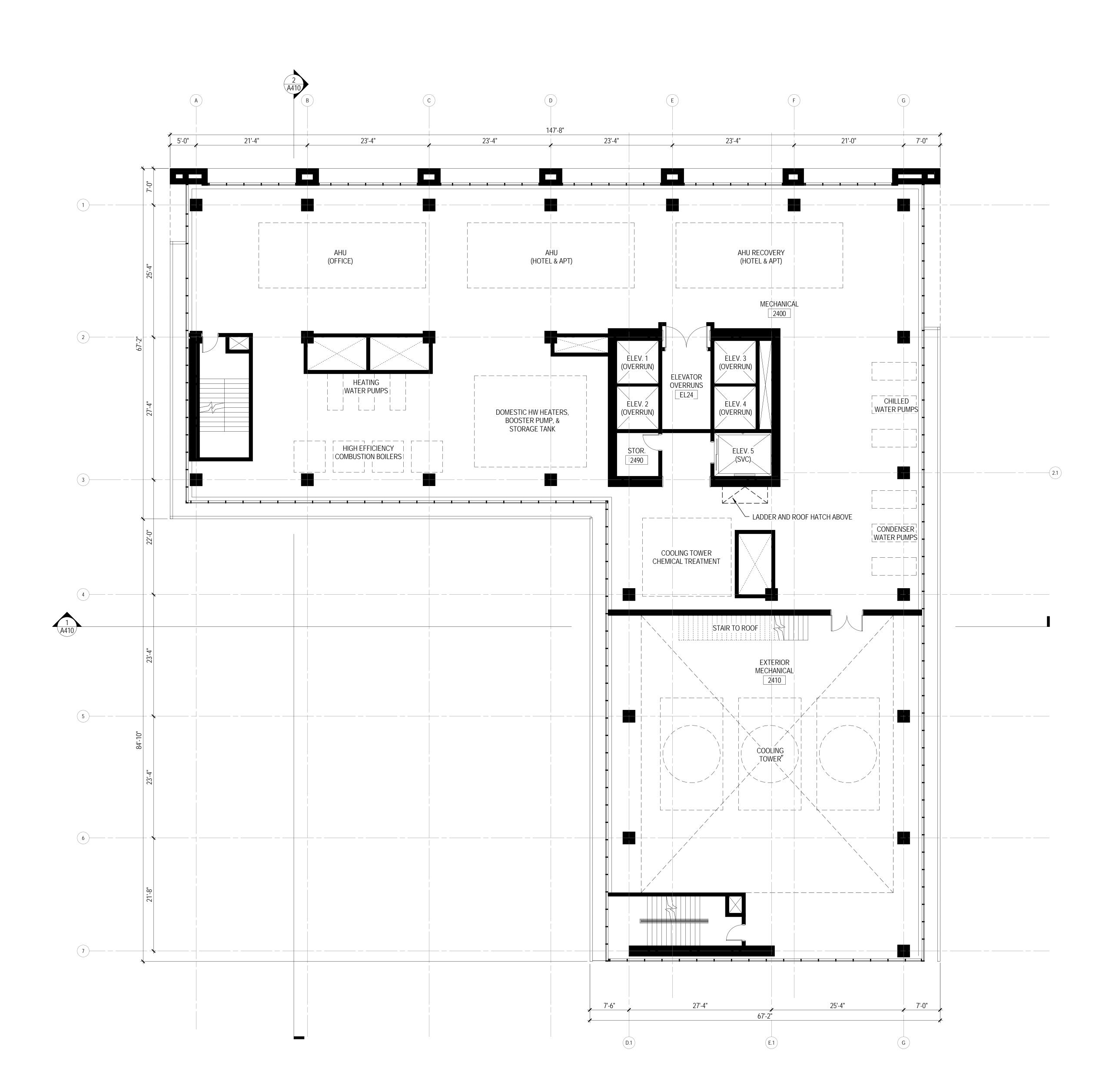
DATE: DECEMBER 19, 2013

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NAME: Victor Pechaty DATE: DECEMBER 19, 2013 REGISTRATION NUMBER:

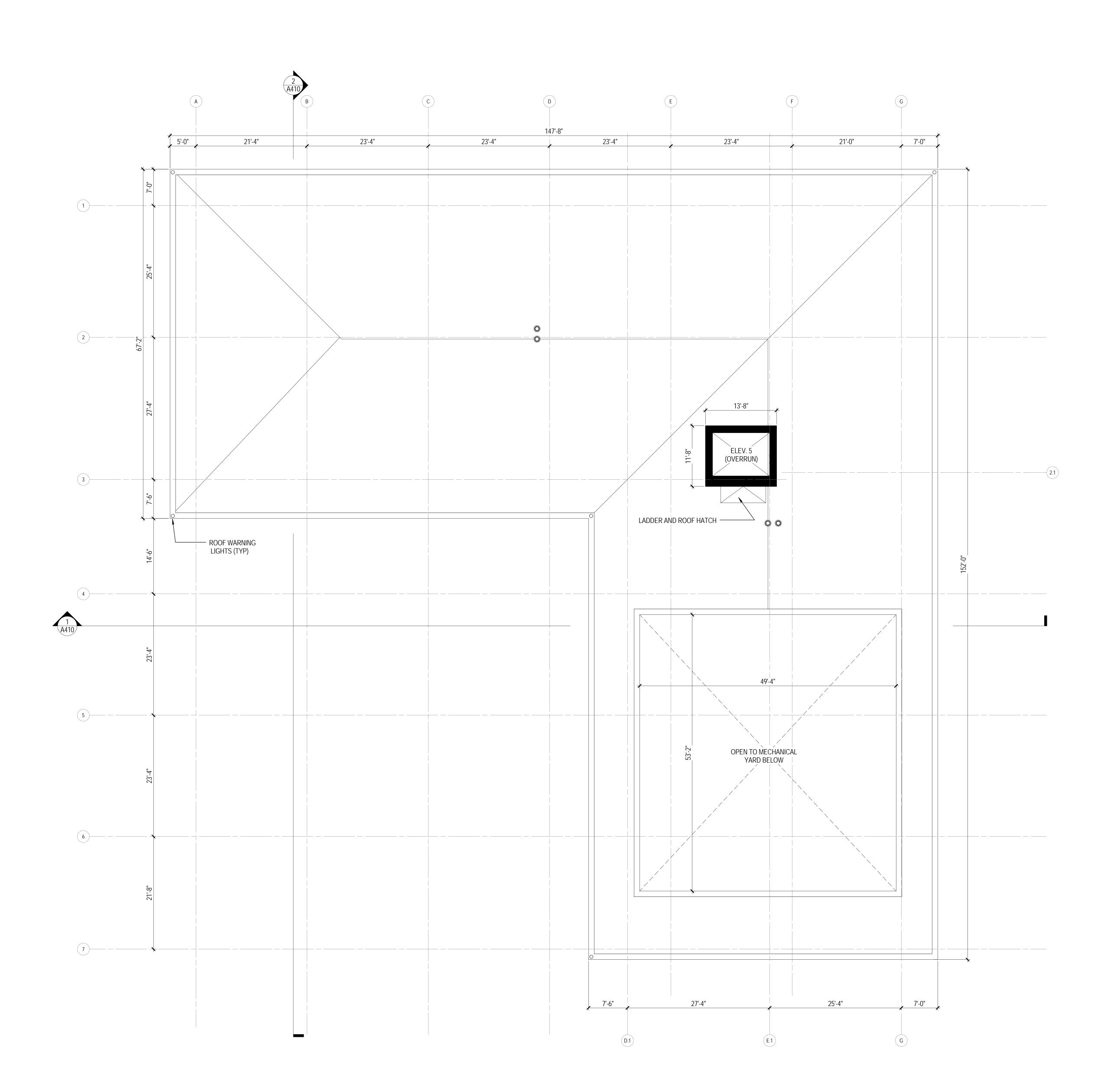


TWENTY-FOURTH LEVEL FLOOR PLAN

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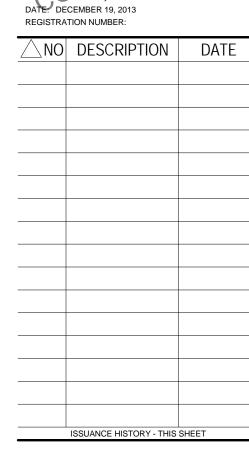


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NAME: Victor Pechaty DATE: DECEMBER 19, 2013 REGISTRATION NUMBER:



ROOF LEVEL FLOOR PLAN

DATE: DECEMBER 19, 2013

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A225





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△NO DESCRIPTION DATE

HGA NO: 1446-047-02

EXTERIOR PERSPECTIVES

DATE: DECEMBER 19, 2013 SCHEMATIC DESIGN PRICING PACKAGE

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A409B

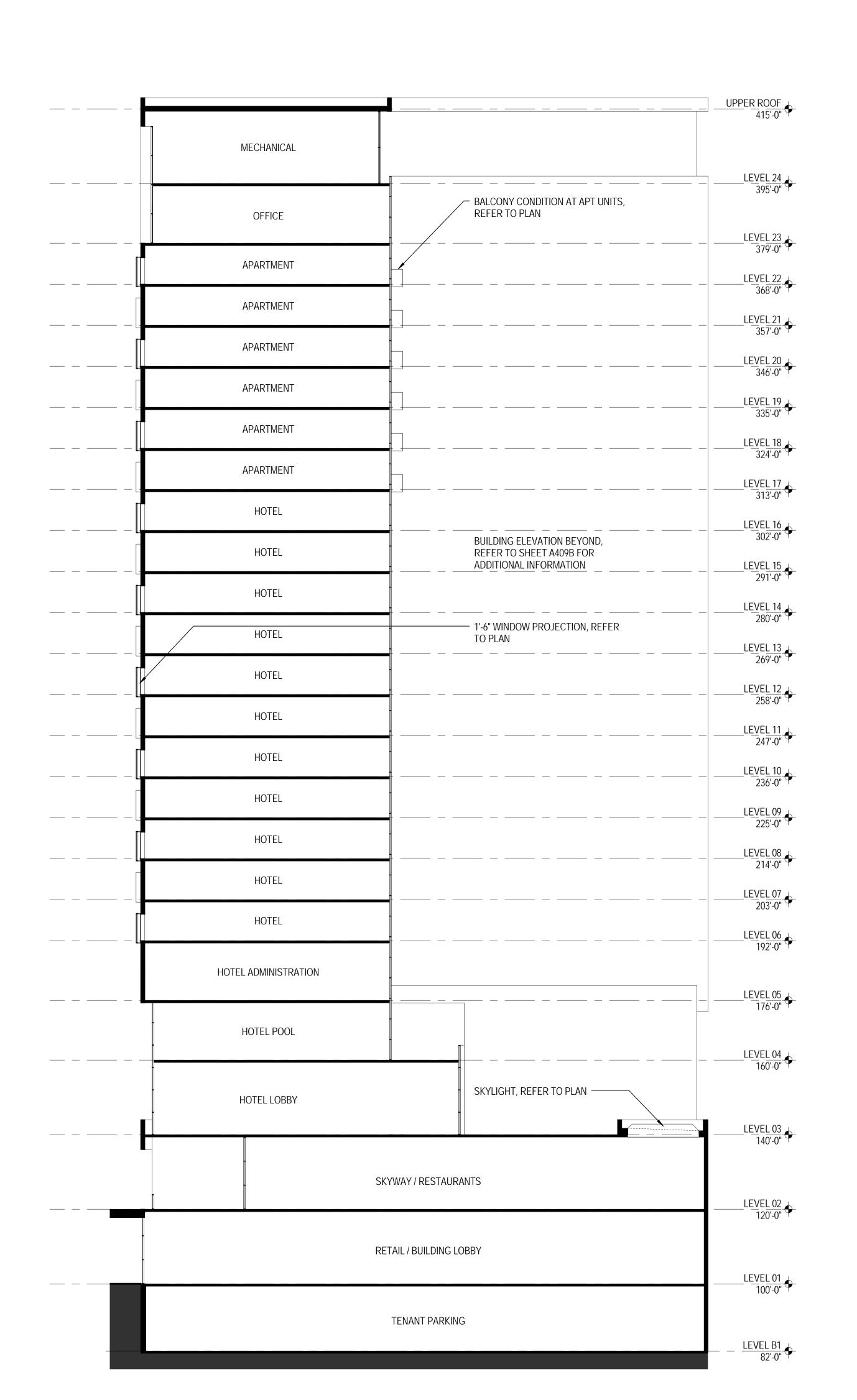
CW-A (GL-22) BALCONY CONDITION AT APT UNITS, REFER TO PLAN SKYLIGHT, REFER TO PLAN SKYLIGHT, REFER TO PLAN - SKYWAY CONNECTION (NIC) (GL-22)

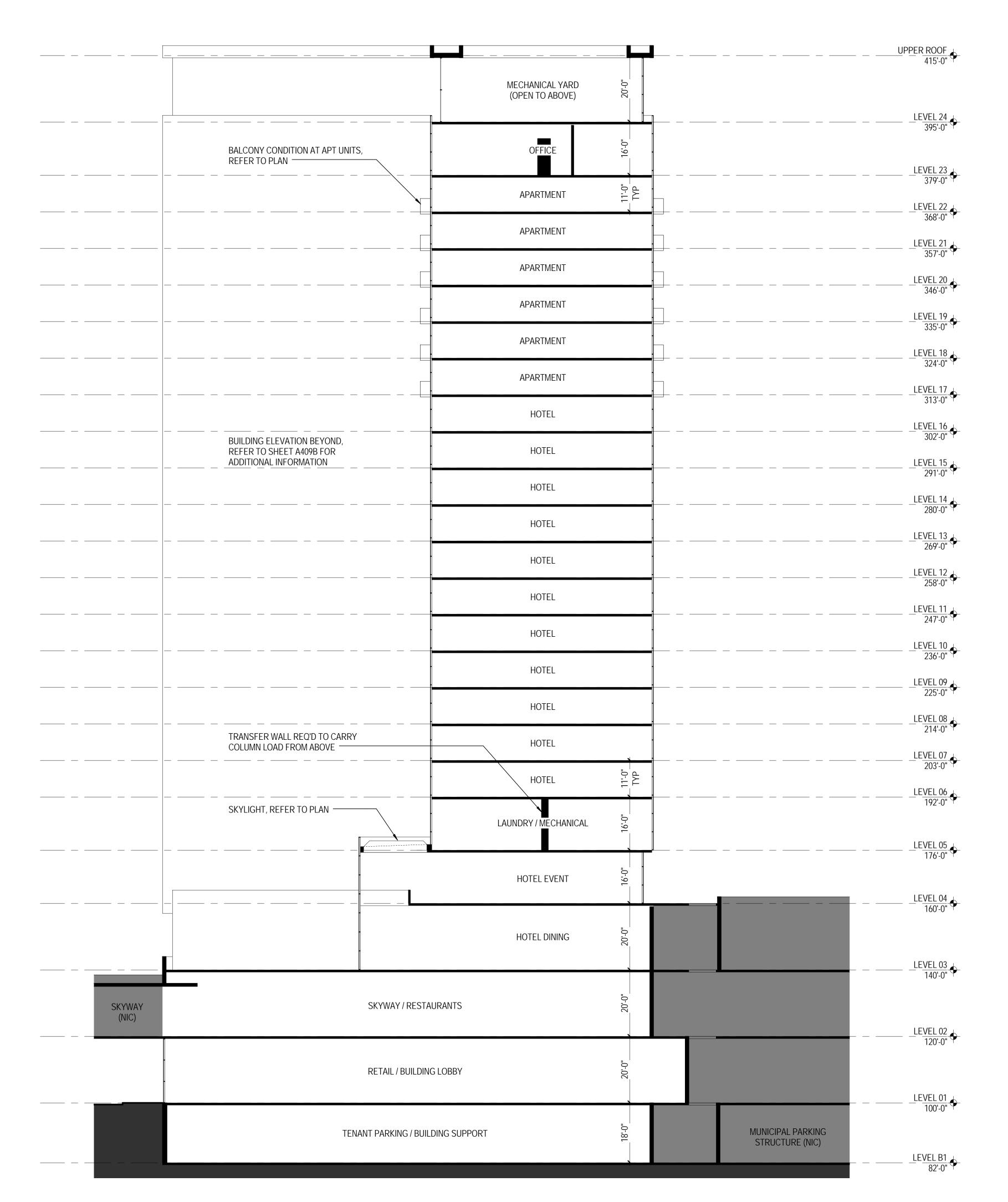
SOUTHWEST PERSPECTIVE



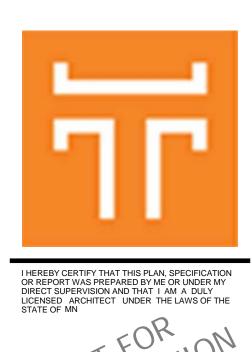


NORTHWEST ENVELOPE DETAIL





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NAME: Victor Pechaty
DATE: DECEMBER 19, 2013
REGISTRATION NUMBER:

NO DESCRIPTION DATE

ISSUANCE HISTORY - THIS SHEET

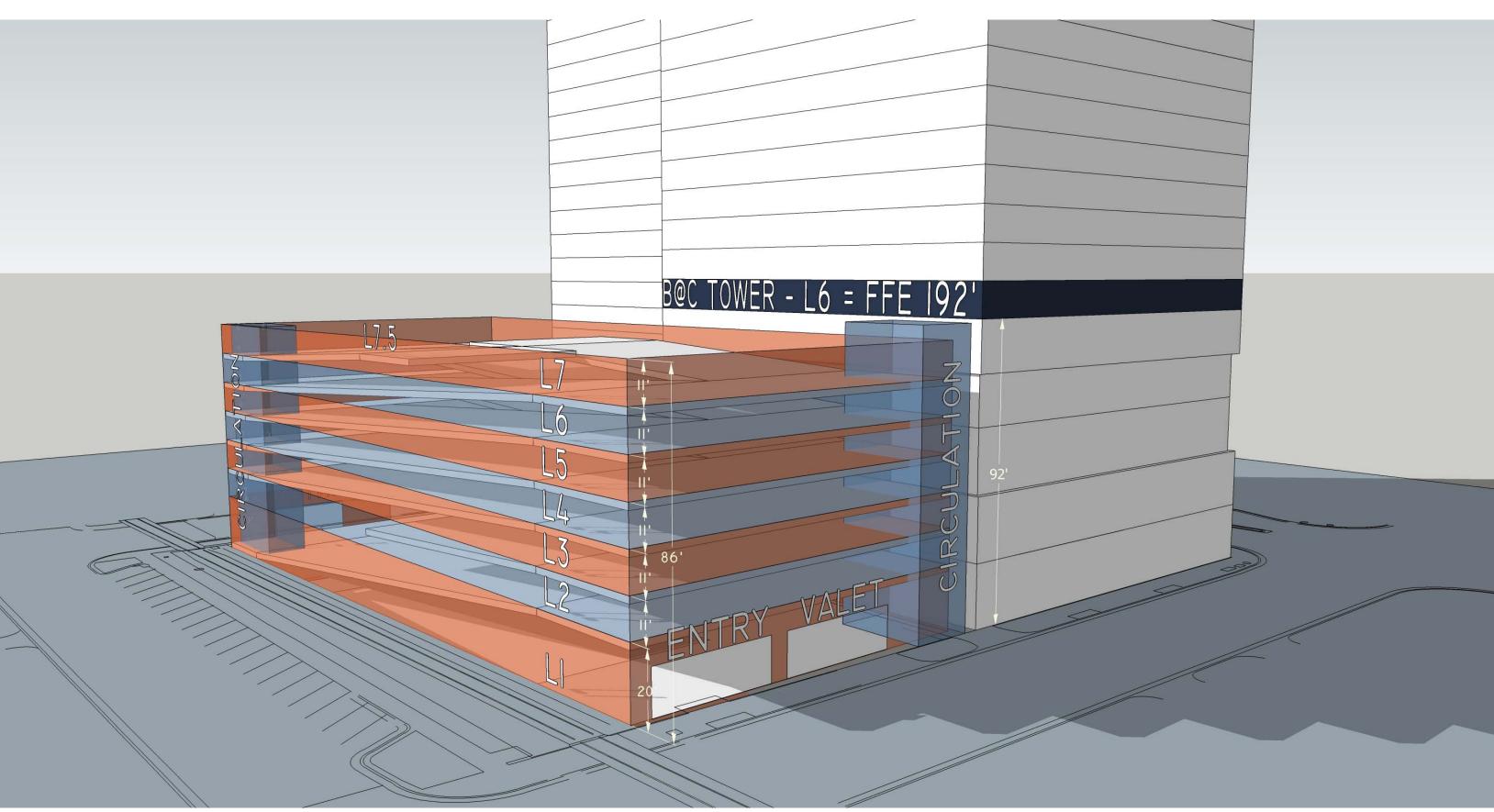
HGA NO: 1446-047-02

BUILDING SECTIONS

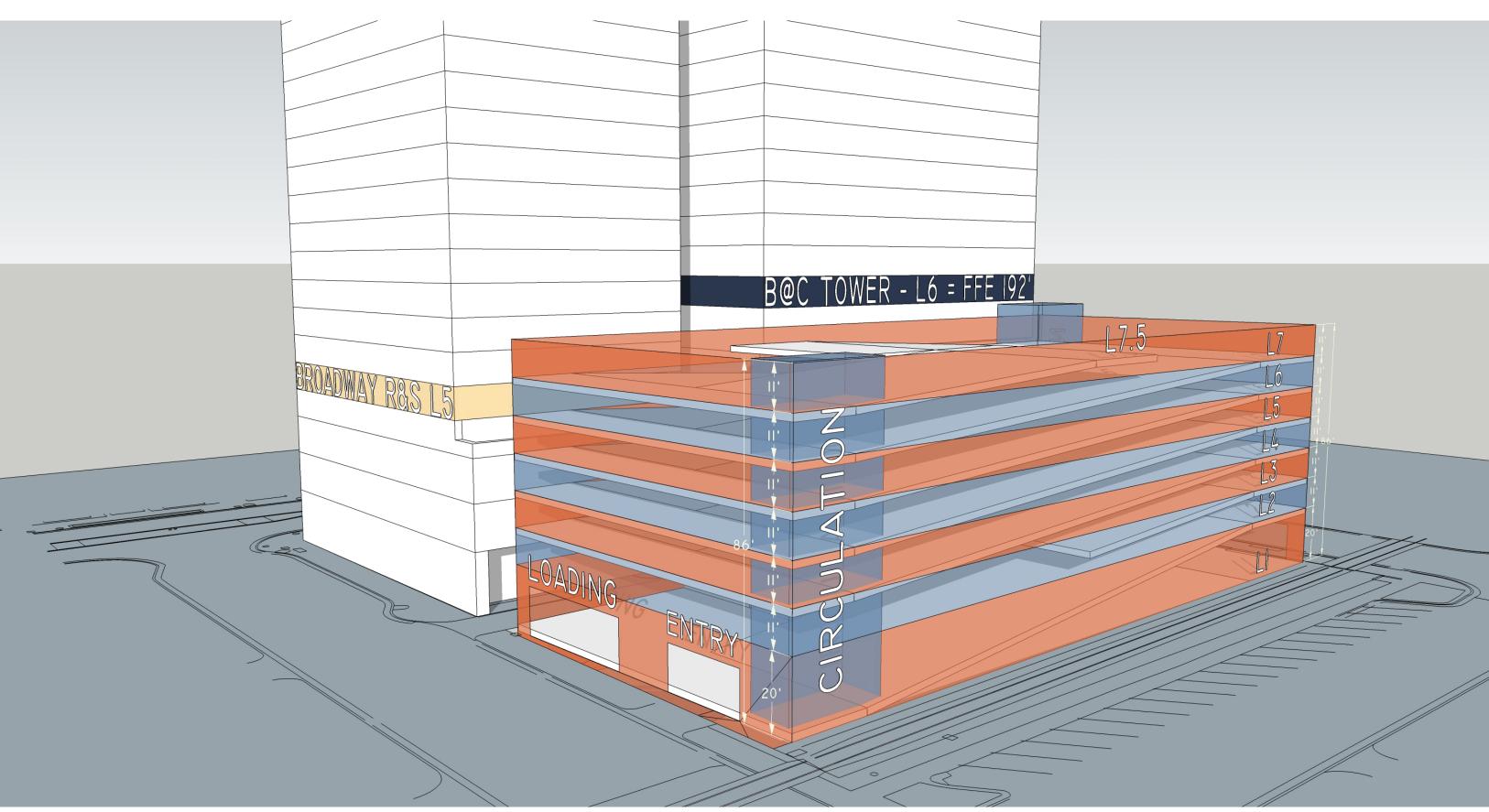
DATE: DECEMBER 19, 2013

SCHEMATIC DESIGN
PRICING PACKAGE

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BROADWAY AT CENTER - PARKING STUDY CENTER STREET VIEW JAN 23RD, 2014



BROADWAY AT CENTER - PARKING STUDY FIRST STREET VIEW JAN 23RD, 2014

Appendix B

Analytical Summary Tables from Previous Investigations

Table 1 Soil Analytical Results - Detected Compounds Only Broadway at Center Rochester, MN RO-13-08144A

		Sample Identifier															
Compound/Parameter	CAS No.	ST 8 4-6'	ST 9 12-14'	ST 10 6-8'	ST 11 0-2'	ST 12 2-4'	ST 12 6-8'	ST 13 6-8'	ST 14 4-6'	ST 16 0-2'	ST 18 0-2'	ST 20 0-2'	ST 21 6-8'	ST 23 10-12'	Residential Soil Reference	Industrial Soil Reference	Tier I Soil Leaching Value
compound/i arameter		1/30/2014	1/30/2014	1/30/2014	1/30/2014	1/31/2014	1/31/2014	1/31/2014	1/29/2014	1/29/2014	1/29/2014	1/29/2014	1/30/2014	1/30/2014	Value (mg/kg)	Value (mg/kg)	(mg/kg)
		1400490	1400490*	1400490	1400490	1400491	1400491	1400491	1400490	1400490	1400490	1400490	1400490	1400490		3 3 4 67	
Volatile Organic Compounds (mg/kg)		1												1			
1,2,4-Trimethylbenzene	95-63-6	<0.20	<0.24	<0.14	<0.19	<0.21	<0.19	<0.17	<0.21	<0.19	<0.16	0.18	<0.22	<0.20	8	25	2.7
Naphthalene	91-20-3	<0.20	<0.24	<0.14	<0.19	<0.21	<0.19	<0.17	<0.21	0.2	<0.16	0.17	<0.22	<0.20	10	28	4.5
o-Xylene	95-47-6	<0.081	<0.096	<0.058	<0.078	<0.084	<0.078	<0.069	<0.084	0.11	0.092	0.11	<0.087	<0.080	45 ^a	130 ^a	5.4 ^a
Semivolatile Organic Compounds (mg/kg)		[11]	1	1	1	[11]			1		ı	ı		1	1		
2-Methylnaphthalene	91-57-6	<0.14 [11]	<0.15	<0.14	<0.15	<0.14 [11]	<0.14	<0.14	<0.14	0.47	0.43	0.44	<0.14	<0.15	100	369	NE
Acenaphthylene	208-96-8	<0.14 [11]	<0.15	<0.14	<0.15	<0.14 [11]	<0.14	<0.14	<0.14	0.23	<0.15	0.16	<0.14	<0.15	NE	NE	NA
Anthracene	120-12-7	<0.14 [11]	<0.15	<0.14	<0.15	<0.14 [11]	0.17	<0.14	<0.14	0.38	0.15	0.16	<0.14	<0.15	7880	45400	1300
Benz(a)anthracene	56-55-3	<0.14 [11]	0.41	<0.14	0.32	<0.14 [11]	0.48	<0.14	<0.14	1.9	0.72	0.7	<0.14	0.98	cPah	cPah	cPah
Benzo(a)pyrene	50-32-8	<0.14 [11]	0.3	<0.14	0.3	<0.14 [11]	0.44	<0.14	<0.14	1.7	0.7	0.7	<0.14	0.41	cPah	cPah	1.4
Benzo(b)fluoranthene	205-99-2	<0.14 [11]	0.49	< 0.14	0.4	<0.14 [11]	0.57	<0.14	<0.14	2.5	1	1	<0.14	2.4	cPah	cPah	cPah
Benzo(g,h,i)perylene	191-24-2	<0.14 [11]	0.21	<0.14	0.21	<0.14 [11]	0.31	<0.14	<0.14	1.1	0.49	0.53	<0.14	0.97	NE	NE	NE
Benzo(k)fluoranthene	207-08-9	<0.14 [11]	0.17	<0.14	0.15	<0.14 [11]	0.2	<0.14	<0.14	0.81	0.36	0.31	<0.14	0.75	cPah	cPah	cPah
Chrysene	218-01-9	<0.14 [11]	0.43	< 0.14	0.33	<0.14 [11]	0.49	< 0.14	< 0.14	2.2	0.85	0.82	< 0.14	1.6	cPah	cPah	cPah
Dibenz(a,h)anthracene	53-70-3	<0.14 [11]	< 0.15	< 0.14	< 0.15	<0.14 [11]	<0.14	< 0.14	< 0.14	0.32	< 0.15	< 0.14	< 0.14	0.29	cPah	cPah	cPah
Dibenzofuran	132-64-9	<0.14 [11]	<0.15	<0.14	< 0.15	<0.14 [11]	<0.14	<0.14	<0.14	0.18	< 0.15	0.16	< 0.14	<0.15	104	810	NE
Fluoranthene	206-44-0	<0.14 [11]	0.32	<0.14	0.67	<0.14 [11]	1	<0.14	<0.14	2.9	1.1	1.1	<0.14	0.91	1080	6800	670
Indeno(1,2,3-cd)pyrene	193-39-5	<0.14 [11]	0.23	<0.14	0.23	<0.14 [11]	0.34	<0.14	<0.14	1.2	0.54	0.54	<0.14	1.2	cPah	cPah	cPah
Naphthalene	91-20-3	<0.14 [11]	<0.15	<0.14	<0.15	<0.14 [11]	<0.14	<0.14	<0.14	0.28	0.24	0.23	<0.14	<0.15	10	28	4.5
Phenanthrene	85-01-8	<0.14 [11]	0.62	<0.14	0.45	<0.14 [11]	0.61	<0.14	<0.14	1.8	0.83	0.82	<0.14	<0.15	NE	NE	NE
Pyrene	129-00-0	<0.14 [11]	0.29	<0.14	0.53	<0.14 [11]	0.87	<0.14	<0.14	2.9	1.2	1.1	<0.14	0.79	890	5800	440
BaP Equivalent**			0.434		0.413		0.604			2.54	0.97	0.963		1.12	2	3	
Total Petroleum Hydrocarbons (mg/kg)																	
Diesel Range Organics (DRO)	NA	<9.2	27 ^[4]	<9.1	18 [4]	<10 [5]	110 ^[4]	28 [4]	<9.2 [4]	130 ^[4]	120 ^[4]	110 [4]	<9.5 [3]	<9.8 [4]	NE	NE	NE
Metals (mg/kg)																	
Arsenic	7440-38-2	2	31	<1.9	4.2	4.8	5.9	4	<2.0	14	8.8	5.5	6.7	13	9	20	5.8
Barium	7440-39-3	20	64	21	120	41	66	49	21	180	100	150	38	48	1100	18000	1700
Cadmium	7440-43-9	<0.47	6.6	<0.48	< 0.55	< 0.45	< 0.51	< 0.47	< 0.49	1.4	<1.1 [10]	<1.1 [10]	<1.1 [10]	1.6	25	200	8.8
Chromium	7440-47-3	8.8	17	6.9	14	28	11	8.5	7.3	15	15	13	9.7	12	87 ^c	650 ^c	36 ^c
Lead	7439-92-1	2.5	30	2.2	59	2.6	7.1	4.3	2.4	510	76	80	5	57	300	700	2700
Mercury	7439-97-6	< 0.016	4	<0.018	0.18	<0.018	<0.021	<0.019	< 0.019	0.26	0.14	0.18	<0.017	1.2	0.5	1.5	3.3
Mercury, TCLP	7439-97-6		<0.00020														
	•	•	•	•	•	•		•	•		•	•	•	•	•		

Notes:

^[3] The sample chromatogram indicates the presence of lower boiling hydrocarbons than expected in the diesel range chromatogram.

^[4] The sample chromatogram indicates the presence of lower and higher boiling hydrocarbons than expected in the diesel range chromatogram.

^[5] The sample chromatogram indicates the presence of higher boiling hydrocarbons than expected in the diesel range chromatogram.

^[10] The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.

^[11] One or more surrogate recoveries reported with this sample analysis are outside of the laboratory control limits.

mg/kg = Milligrams per kilogram.

< = Less than the reporting limit indicated in parentheses.

^{---- =} Not analyzed or calculated for this parameter

NE = Not Established

SRV - Soil Reference Value established by the Minnesota Pollution Control Agency; 1999, revised 2009

SLV - Soil Leaching Value established by the Minnesota Pollution Control Agency; 1999, revised 2005

Maximum Concentration of Contaminants for the Toxicity Characteristic established by the Environmental Protection Agency; 0990, revised 2006

cPAH = Individual criteria not established. Included in BaP equivalent calculation.

^{*=}Mercury TCLP sample analysis was reported under Report#1400622

^{** =} Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs (cPAH); Minnesota Pollution Control Agency, 2002.

^a = Criteria for mixture of o, m and p-xylenes.

c = Criteria for hexavalent chromium.

Table 2
Groundwater Analytical Results - Detected Compounds Only
Broadway at Center
Rochester, MN
RO-13-08144A

		S				
Compound/Parameter	CAS No.	ST-2	ST-18	ST-22	Drinking Water	
Compound/Farameter	CAS NO.	12/22/2013	1/29/2014	2/4/2014	Criteria (ug/L)	
		1307226	1400490	1400552		
Volatile Organic Compounds (ug/L)						
2-Butanone (MEK)	78-93-3	190 ^[8]	<10	<20 [12]	4000	
Acetone	67-64-1	160 ^[8]	<15	<30 [12] [9]	4000	
Chloromethane	74-87-3	1.4 ^{[9] [10]}	<1.0	<2.0 [12]	30	
Methyl Isobutyl Ketone	108-10-1	<5.0 ^[10]	<5.0	14 ^[12]	300	
Tetrachloroethene	127-18-4	<2.5 [10]	5.3 ^[2]	<5.0 ^[12]	5	
Tetrahydrofuran	109-99-9	980 ^[8]	<5.0	<10 [12]	100	
Trichlorofluoromethane	75-69-4	4 ^[10]	<1.0	<2.0 [12]	2000	
Total Petroleum Hydrocarbons (ug/L)						
Diesel Range Organics (DRO)	NA		160 ^[4]	220 ^{[4] [7]}	NE	

Notes:

NE =Not Established

Drinking Water Criteria from Minnesota Pollution Control Agency Risk Based Site Evaluation Process Groundwater Guidance Document, Revised 08/2010.

Minnesota Drinking Water Criteria based on following hierarchy of MDH recommended values: Health Risk Levels, Health Based Values, Risk Assessment Advise, Maximum Contaminant Level and Unit Risk Level or Lifetime Health Advisory Level.

^[2] Tetrachloroethene recovery for the continuing calibration sample is 79.3%. Method requirements are 80%-120%. There may be a low bias in the sample results.

^[4] The sample chromatogram indicates the presence of lower and higher boiling hydrocarbons than expected in the diesel range chromatogram.

 $^{^{[7]}}$ The sample pH was 3; this is above the method specified limit (pH<2).

^[8] The method reporting limit (MRL) was raised for one or more analytes; a dilution of the sample was necessary due to high analyte leve

^[9] The relative percent difference (RPD) was outside of laboratory control limits for the sample and sample duplicate (DUP).

^[10] See case narrative section for further information.

^[12] The method reporting limits (MRLs) were raised due to reduced sample volume as a result of high sample sediment content. ug/L = Micrograms per liter.

< = Less than the reporting limit indicated in parentheses.

^{---- =} Not analyzed or calculated for this parameter

Table 3
Soil Vapor Analytical Results - Detected Compounds Only
Broadway at Center
Rochester, Minnesota
RO-13-08144

			Sample Identifier							
	CAS No.	ST-6(10.5'-11.5')	ST-4(15'-16')	ST-1(5'-6')	Residential ISV	Residential 10X ISV	Residential 100X ISV	Industrial ISV	Industrial 10X ISV	Industrial 100X ISV
	CAS NO.	12/19/2013	12/19/2013	12/19/2013	(ug/m³)	(ug/m³)	(ug/m³)	(ug/m³)	(ug/m³)	(ug/m³)
Compound/Parameter		1307127	1307127	1307127						
Volatile Organic Compounds (ug/m³)										
1,1,1-Trichloroethane	71-55-6	3.02 [2] [3]	<2.29 ^[2]	<2.53 [2] [3]	5,000.0	50,000	500,000	10,000	100,000	1,000,000
1,3-Butadiene	106-99-0	5.4 ^{[2] [3]}	5.58 ^[2]	29.5 ^{[2] [3]}	0.3	3	30	1	10	100
2-Butanone (MEK)	78-93-3	5.25 ^{[2] [3]}	10.6 ^[2]	8.12 ^{[2] [3]}	5,000.0	50,000	500,000	10,000	100,000	1,000,000
2-Propanol	67-63-0	1.41 ^{[2] [3]}	1.46 ^[2]	<1.23 [2] [3]	7,000.0	70,000	700,000	20,000	200,000	2,000,000
Acetone	67-64-1	107 ^{[2] [3]}	108 ^[2]	46.9 ^{[2] [3]}	31,000.0	310,000	3,100,000	87,000	870,000	8,700,000
Benzene	71-43-2	4.88 ^{[2] [3]}	6.4 ^[2]	42.7 ^{[2] [3]}	4.5	45	450	13	130	1,300
Carbon disulfide	75-15-0	9.39 ^{[2] [3]}	7.78 ^[2]	4.82 ^{[2] [3]}	700.0	7,000	70,000	2,000	20,000	200,000
Chloroform	67-66-3	25.1 ^{[2] [3]}	3.31 ^[2]	<2.36 ^{[2] [3]}	100.0	1,000	10,000	300	3,000	30,000
Chloromethane	74-87-3	<0.913 [2] [3]	<0.900 [2]	2.24 ^{[2] [3]}	90.0	900	9,000	300	3,000	30,000
Cyclohexane	110-82-7	3.04 ^{[2] [3]}	5.29 ^[2]	1.66 ^{[2] [3]}	6,000.0	60,000	600,000	20,000	200,000	2,000,000
Dichlorodifluoromethane	75-71-8	6.33 ^{[2] [3]}	114 ^[2]	2.51 ^{[2] [3]}	200.0	2,000	20,000	600	6,000	60,000
Ethanol	64-17-5	4.46 ^{[2] [3]}	5.17 ^[2]	5.47	15,000.0	150,000	1,500,000	42,000	420,000	4,200,000
Ethyl Acetate	141-78-6	1.59 ^{[2] [3]}	<1.57 ^[2]	<1.74 [2] [3]	3,000.0	30,000	300,000	8,000	80,000	800,000
Ethylbenzene	100-41-4	10.1 ^{[2] [3]}	10.1 ^[2]	16.5 ^{[2] [3]}	1,000.0	10,000	100,000	3,000	30,000	300,000
m,p-Xylenes	179601-23-1	8.36 ^{[2] [3]}	18.4 ^[2]	47.6 ^{[2] [3]}	100 ^a	1000 ^a	10,000 ^a	300 ^a	3,000 ^a	30,000 ^a
Methylene chloride	75-09-2	10.3 ^{[2] [3]}	7.34 ^[2]	16.4 ^{[2] [3]}	20.0	200	2,000	60	600	6,000
n-Heptane	142-82-5	6 ^{[2] [3]}	17.2 ^[2]	9.02 ^{[2] [3]}	NE	NE	NE	NE	NE	NE
n-Hexane	110-54-3	13.9 ^{[2] [3]}	29.1 ^[2]	12.6 ^{[2] [3]}	2,000.0	20,000	200,000	6,000	60,000	600,000
o-Xylene	95-47-6	2.72 ^{[2] [3]}	5.93 ^[2]	21.1 ^{[2] [3]}	100 ^a	1000 ^a	10,000 ^a	300 ^a	3,000 ^a	30,000 ^a
Propylene	115-07-1	92.3 ^{[2] [3]}	111 ^[2]	1610 ^[7]	3,000.0	30,000	300,000	8,000	80,000	800,000
Tetrachloroethene	127-18-4	12.2 ^{[2] [3]}	6.25 ^[2]	<3.28 [2] [3]	20.0	200	2,000	60	600	6,000
Toluene	108-88-3	20.8 ^{[2] [3]}	20 ^[2]	21.4 ^{[2] [3]}	5,000.0	50,000	500,000	10,000	100,000	1,000,000
Trichloroethene	79-01-6	7.17 ^{[2] [3]}	3.07 ^[2]	<2.60 [2] [3]	3.0	30	300	8	80	800
Trichlorofluoromethane	75-69-4	4.19 [2] [3]	259 ^[2]	5.68 ^{[2] [3]}	700.0	7,000	70,000	2,000	20,000	200,000

Notes

NE = Not Established

Intrusion Screening Values (ISV) from Risk-Based Guidance for the Vapor Intrusion Pathway, Minnesota Pollution Control Agency Superfund, RCRA, and Voluntary Cleanup Section, February 2009. Intrusion Screening Values (ISVs) for the Minnsota Pollution Control Agency Petroleum Remediation Program, October 2010.

^[1] The initial calibration failed to meet requirements for Methyl-t-butyl ether. This analyte was not detected in the sample.

^[2] See case narrative section for further information.

^[3] One or more surrogate recoveries reported with this sample analysis are outside of the laboratory control limits.

^[4] Compounds were tentatively identified by comparison to the NIST (NBS) database of mass spectra. These identifications represent the best fit obtained from the database search, subject to the interpretation of the analyst.

^[5] Concentrations are estimated values calculated relative to the closest eluting internal standard using peak areas from the total ion chromatogram and a relative response factor of one.

^[6] The reported value for the unknown analyte is based on a molecular weight of 100 because the actual molecular weight is not known.

^[7] The method reporting limit (MRL) was raised for one or more analytes; a dilution of the sample was necessary due to high analyte levels and/or matrix interferences. ug/m³ = Micrograms per cubic meter.

< = Less than the reporting limit indicated in parentheses.

^{---- =} Not analyzed or calculated for this parameter

^a Criteria for mixture of o, m and p-xylenes.